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JOURNAL of the american dietetic association

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Advertising: All correspondence concerning advertising should be addressed to The American Dietetic Association, 620 North Michigan Avenue, Chicago 11, Illinois.

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Role of Dietary Sodium in Essential Hypertension[1]

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THE ADDITION of salt to food is at least as old as recorded history, but the present cheapness and availability of this condiment are poor indicators of its former scarcity and of the high value placed upon it in earlier times. Some readers may be old enough to remember that as late as 1930, the Indian leader Gandhi made a protest march against paying a tax on salt—a well established means of raising money on a valued commodity (1). Even now in Eastern Europe and the Near East to share "bread and salt" is a mark of friendship and favor. In New York City today by contrast, salt has so little value that it is cheaper—and easier—to buy a pound of it than a pound of soil. While there are definite quantitative differences in salt usage among individuals and groups, the addition of salt to food in modern societies is virtually a universal practice, with the amounts ingested bearing no necessary relation to physiologic need.

Despite this current widespread dietary use of salt, it has received surprisingly little attention from professional nutritionists. Indeed, through their awareness of the important communal influences which traffic in salt has had in the past, until recently social anthropologists have been virtually alone in their interest in the salt habits of societies. It is the writer's opinion that the time has come for students of nutrition also to become interested in salt because of the increasing evidence that excess salt, i.e., sodium chloride, ingestion is the cause of a major cardiovascular disease, essential hypertension (2-7). In this paper, I propose to explore the evidence for this statement. All of the experimental and clinical evidence implicates the sodium rather than the chloride ion as the toxic element, and hereafter, the use of the words "salt" or "sodium chloride" may be assumed to indicate a primary interest in the sodium ion.

[1]This work was carried out under the auspices of the United States Atomic Energy Commission. The substance of this paper was presented at the 40th Annual Meeting of The American Dietetic Association in Miami, on October 23, 1957.

Normal Salt Requirements

It is clear that to stay in prolonged metabolic balance, salt intake must be equivalent to salt loss. But just as there is no obligatory relevance between caloric intake and need, there is no necessary relationship between salt intake and requirements. Estimates of normal adult salt requirements generally appear to have been based on existing levels of intake or the amounts excreted in the urine, both of which may reflect habit or custom rather than physiologic need. Estimates of from 5 to 15 gm. sodium chloride per day are common (8-11). Lower estimates of the actual needs have been made, the earliest of which was that of Allen who wrote in 1925 (12) that "the normal requirement of sodium chloride is low . . . the diet which furnishes 0.2 to 0.3 gm. in the daily urine falls . . . close to this minimum . . ."

SODIUM LOSSES

From careful metabolic studies which have been made in several laboratories during the past fifteen years, the minimal requirements for sodium have been defined more clearly. In normal adults, the principal loss of sodium occurs through the urine, with the skin and feces ordinarily less important. Other avenues of loss—tears, saliva, hair, nails, semen, and menstrual blood—usually are small enough to be disregarded in the present assessment of need. The lowest reported daily losses of sodium from skin came from the writer's laboratory (13) in which seven adults on low-sodium (100-150 mg. per day) diets for one to five months, over a total of ten days averaged less than 25 mg. sodium loss per day from the skin.

These individuals were ambulatory but not grossly sweating. As is well known, the loss of sodium with perspiration may be very great under some circumstances. Fortunately there is an adaptive mechanism which operates when there is chronic salt loss through sweat, namely, through the action of the adrenal cortex, there is an increased pro-

duction of salt-retaining hormones—chiefly aldosterone—by means of which a drastic reduction in the sodium chloride concentration of sweat is effected. The same mechanism is brought into play when dietary sodium chloride is chronically reduced. Conn found (14) that healthy subjects sweating from 5 to 9 liters per day could maintain salt balance on daily intakes as low as 1.9 gm. sodium chloride (0.75 gm. sodium). It might be unwise to assume that sodium balance could be maintained indefinitely under such strenuous conditions, but the important point is that the amount of salt lost through sweating is largely dependent on the amount being ingested. For instance, during the past ten years, I have been studying and treating ambulatory patients with essential hypertension in whom dietary sodium ranged from 100 to 200 mg. per day. I have never found it necessary to add extra salt to the diets of these individuals during the hot summer months which prevail in and around New York City.

Stool losses of sodium ordinarily are small and relatively independent of the amount ingested. Thus on daily sodium intakes ranging from 50 to 4100 mg. (0.13 to 10.0 gm. sodium chloride), only about 10 to 125 mg. were found in stools (15, 16).

Renal loss of sodium, as mentioned, is the chief route by which sodium is excreted and, in the absence of gross sweating or abnormal extrarenal loss, is an accurate reflection of dietary intake. The remarkable capacity for reducing urinary sodium was demonstrated by a twenty-seven-year-old patient who, during a period of four and a half months on a diet containing a maximum of 175 mg. sodium per day, on one occasion excreted 3 mg. in 24 hr.; in this time, he had only three 24-hr. urine samples that contained more than 20 mg. sodium, the highest of which was 44 mg. In numerous patients with and without hypertension who have been studied in similar fashion during the past ten years (13, 15, 17-19), it has been found that on prolonged sodium restriction daily urinary losses commonly range from about 10 to 100 mg.

From the previous considerations, one might estimate the "obligatory"—or irreducible—daily sodium losses to be about as follows: urine, 5 to 35 mg.; stool, 10 to 125 mg.; non-sweating skin, 25 mg.; total, 40 to 185 mg. Estimates of loss from the other bodily secretions and excretions suggest that these ordinarily would not exceed an average of 10 to 15 mg. per day. "Non-obligatory" requirements would be due chiefly to sweat loss, but in the individual continuously on a low-sodium diet, even these sweat losses would not be as great as noted above. Thus these data indicate the likelihood that sodium balance could be maintained adequately on sodium intakes of about 50 to 200 mg. per day, in the absence of excessive, prolonged sweating.

BALANCE ON LOW-SODIUM INTAKE

Therefore, it is pertinent to report that the writer presently has under observation two ambulatory patients who have maintained sodium balance for more than one and four years respectively while on sodium intakes averaging only 115 mg. per day. These patients have been under continuous observation on a metabolic ward, with accurately weighed and analyzed diets; 24-hr. urine samples have indicated no deviation from the program. Exhaustive studies recently completed and being reported elsewhere have revealed no significant physical, physiologic, biochemical, or psychologic changes after sodium restriction of this degree and duration.

While these two subjects appear to be unique by virtue of their proven sodium restriction for this long period, there is other evidence to indicate that low-salt diets are compatible with normal, active lives. For instance, there were many vigorous societies which for generations had no recourse to salt except that which occurred naturally in their food. Among these were the Eskimos, certain Chinese and Northwest American Indians, the Lapps, and the Masai of Africa (20-24). Available data and calculations based on known sodium content of foods indicate that the diets of these peoples contained about 1 to 2 gm. sodium and sometimes substantially less.

Finally, during the last thirty-five years, beginning with the pioneering work of Allen and Sherrill (12, 25), "low-salt" diets have been used widely in the treatment of diseases, particularly those of the cardiovascular and renal systems. While these regimens have differed in many other respects, they had in common a markedly restricted sodium intake, generally of the order 100 to 1000 mg. per day, on which patients have maintained health and normal activities for years.

This evidence suggests that the minimal sodium requirements of the normal adult are quite small, probably about 200 mg. per day (500 mg. as sodium chloride). It should not be surprising, therefore, that groups appear to have flourished on daily sodium intakes which today would be regarded as being "low-sodium diets".

Normal Salt Intakes

Among members of western societies, estimates of actual salt intakes indicate significantly higher levels than the requirements just summarized. A recent bulletin of the National Research Council gives the average salt intake for the normal adult as 7 to 15 gm. per day (2.8 to 6.0 gm. sodium) (26), an estimate in line with other sources which the writer has found. It is of interest that primary data on intake are relatively uncommon.

Ashe and Mosenthal in 1937 reported (27) the 24-

hr. urinary chloride excretion of 1000 ambulatory adults in New York City. (From an earlier discussion it will be recalled that ordinarily the daily urinary output is an accurate index of sodium chloride intake. The chloride output may be assumed to equal sodium without fear of gross error; however, since it is the sodium rather than the chloride ion which is primarily of interest, measurement of sodium obviously is the more accurate procedure because all chloride is not bound to sodium and *vice versa*). Calculated as sodium chloride, Ashe and Mosenthal found only 50 subjects who excreted 4 gm. or less; 416 excreted 4 to 8 gm., and 534 excreted more than 8 gm. in 24 hr. In a recent paper (7), the present writer has used data on the 24-hr. urinary sodium excretion of 71 ambulatory adult males as an index of daily sodium intake. Collection periods ranged from 1 to 38 days; mean and median sodium excretions were about 4000 mg. per day (equivalent to 10 gm. sodium chloride) with a range of 1450 to 9300 mg. (4 to 24 gm. as sodium chloride).

Thus, while metabolic balance can be maintained on a few hundred milligrams of sodium daily, the average intake in our society commonly appears to exceed this by a factor of about 20. It is pertinent to ask whether this apparently high-salt intake is a response to physiologic need, is a manifestation of a disease process, or is a habit pattern. Space does not permit a thorough discussion of this complex subject. Earlier in this paper it was mentioned that individuals and societies can thrive on salt intakes far below current levels; thus, it is unlikely that high-salt ingestion is based on need. The author has found no evidence of salt-craving among individuals with and without hypertension who were subjected to prolonged and drastic salt restriction.

Therefore, it is improbable that an enhanced salt appetite is a manifestation of the hypertensive process. In man it seems doubtful that there is an inherent salt appetite. Both Stefansson (20) and Holmberg (28) reported that the primitive Eskimos and Sirionos of Bolivia, respectively, disliked salt when they first ate it, but could grow accustomed to it rapidly. There is no question that a salt appetite can be induced both in animals and man.

It is well known that some animals travel great distances to reach salt licks; interestingly, it is the herbivores but not the carnivores and omnivores which do this. The dietary potassium:sodium ratios of herbivores, carnivores, and western adult humans is about 20:1, 5:1, and 1:2, respectively (29, 30), but what these variations in relative potassium:sodium intake mean in physiologic terms is not clear.

To the author, it seems probable that the salt appetite of human beings, is an induced one, based largely on social custom and habit, much as is the use of tobacco and alcoholic drinks in our society.

Evidence that High-Sodium Intake Causes Hypertension

My interest in the problem of sodium and hypertension began in 1948 at the Rockefeller Institute in New York City when Drs. V. P. Dole, G. C. Cotzias, and I began studying hypertension in human beings by means of drastic sodium limitation. The evidence that sodium restriction results in a significant fall in blood pressure in some patients with hypertension is now so overwhelming that discussion of this point is unwarranted. Not long after this work began, I became intrigued by the apparent low incidence of hypertension among truly primitive human races (3). While Bays and Scrimshaw (31) have suggested that this may not be so uniformly, I have found no exceptions among groups that differed widely in ethnic, cultural, and geographic backgrounds. It was of interest to find that a common factor among all of these groups for which data were available was a low intake of sodium, estimated from listed foods or analyses of diets to contain 1 to 2 gm. sodium per day, or even less. Thus, it was possible to deduce—if one were so oriented—that there was an association between a low-salt intake and a low incidence of hypertension.

What would be the effect of the opposite condition, namely a high-salt intake? It has been known for some years that hypertension could be produced experimentally in animals by the administration of various steroids in conjunction with added sodium chloride in the diet (32-34). Later, hypertension was produced by feeding increased amounts of sodium chloride in association only with fluid restriction (35, 36). And finally, the excellent studies of Meneely and his group have shown that chronic ingestion of excess sodium chloride *alone* will produce a disease in rats which mimics human hypertension (37-40).

Hypertension in West Indian Negroes

I early became interested in the West Indian Negroes in whom the incidence of hypertension is known to be much higher than among the whites or Panamanian Indians (41, 42) with whom these Negroes live. In discussing this problem in 1953 with George P. Murdock, an anthropologist of Yale University, I was informed that a scientific associate had reported recently, on returning from a field trip to Jamaica, that the Negroes there ate large amounts of salt, chiefly in salted pork and fish. Furthermore, salt imagery appeared to play a prominent role in the lives of these people. All of this suggested that a high-salt intake was common, and because of their poor economic state and limited diet, such an intake would begin early in life, when at least in animals, the hypertension-producing effect of sodium is much greater.

Although the African Negro has hypertension

less frequently than whites, the southern American Negro, like the West Indian Negro, has this disease more frequently than white Americans in general (43). However, it is not clear from the available data whether the southern Negro has significantly more hypertension than the "poor whites" of the South. Conversations with a number of southern physicians have suggested that hypertension is common among the poor rural white southerners. My explorations of this problem indicated that for many of the southern Negroes, salted pork in one form or another was a staple in the diet consumed from early childhood, sometimes three times a day. Since the diets of the "poor whites" do not differ significantly from those of the Negroes, one would expect that they, too, would have a high-salt intake with a corresponding increase in the incidence of hypertension. This is being pursued further.

Level of Salt Intake and Hypertension

By 1952 the writer believed that there was evidence to indicate a probable cause-and-effect relationship between salt intake and hypertension, and at this juncture, I was able to enlist the valuable assistance of Dr. Robert A. Love of the Industrial Medical Service at Brookhaven Laboratory. Therefore, beginning early in 1953, every employee of the Brookhaven Laboratory who reported to Dr. Love for annual physical examination was queried as to salt intake and classified as follows: (a) low intake—this person did not add, and never had added, salt to his food at the table; (b) average intake—this individual added salt to food only if, after tasting, it was insufficiently salty for his palate; (c) high intake—this person routinely added salt to his food before tasting. Some people had changed their salt-eating habits during their life-time; this was virtually always by decreasing the salt intake as the result of medical advice or in some cases through non-medical avenues. Such individuals were placed in the highest intake group to which they would have belonged formerly.

It was recognized that this classification had at least the following defects: (a) salt intake was not being estimated precisely; and (b) no estimate was made of the salt added to food during cooking and preparation. However, it was believed that the technique would give semi-quantitative data referable to most of the life-time of the individual, and with sufficient numbers in the series, it seemed likely that some of the non-measurable variables might be cancelled out. Further details may be found in the original communications (2-6). During the next three years, data were collected on 1346 consecutive patients, a summary of which is shown in Table 1.

TABLE 1 Salt intake and incidence of hypertension in a group of 1346 employees at Brookhaven Laboratory

SODIUM CHLORIDE INTAKE	SUBJECTS		INCIDENCE OF HYPERTENSION	
	Number	Per cent	Number of subjects	Per cent of intake group
Low	135	10.0	1	0.7
Average	630	46.8	43	6.8
High	581	43.2	61	10.5
Total . . .	1346	100.0	105	7.8

Appropriate statistical analysis indicated that the distribution among the three salt-intake groups might occur by chance alone less than once in a thousand times, making it improbable that this grouping was due to accident. Because there was a disproportionate number of women in the low-intake group, anaysis of the 1124 men was carried out separately (Table 2).

There is still a high degree of significance to this distribution ($p<.001$) with the low-intake group having significantly less ($p<.01$) and the high-intake group more ($p<.02$) hypertension than would have been expected by random arrangement.

Obesity, Salt Intake, and Hypertension

When these men were classified by weight, it was found that obesity further increased the probability of hypertension in people who were on a high-salt intake. It was suggested that the obese person ate more salt along with more food generally and that it was the increased salt intake rather than the obesity which accounted for the increased incidence of hypertension in overweight people. A study recently completed (44) on obese hypertensive persons is in agreement with this postulate; weight loss through caloric restriction ordinarily did not result in a decline in blood pressure unless salt intake was also restricted. In another study (5), the urinary sodium excretion of twenty-eight ambulatory men with and without hypertension was measured for periods of six to thirty-eight days (median, seven days) as an index of salt intake.

Here, too, it was found that the individuals with hypertension ingested significantly ($p<.01$) more salt. However, it was clear that even the people without hypertension were eating far more salt than was necessary for physiologic need (30), and under

TABLE 2 Incidence of hypertension in men only in Brookhaven group

SODIUM CHLORIDE INTAKE	AGE	ALL SUBJECTS		SUBJECTS WITH HYPERTENSION		
		Number	Per cent of total	Number	Per cent of those with hypertension	Per cent of salt intake group
Low	36.8± 9.4	101	9.0	1	1	1
Average	36.1±10.7	522	46.4	38	39	7.3
High	35.7±10.2	501	44.6	58	60	11.6
Total...	36.0±10.4	1124	100.0	97	100	8.6

these circumstances, it might be expected that among such non-hypertensive individuals some would develop hypertension in later years. In other words, the writer suspects that a *moderate* excess of salt intake continued over a long time may cause the same disease which a *great* excess might in a shorter time.

In the past, it has been axiomatic that orientals have virtually no hypertension (43). In recent months I have been in correspondence with T. Fukuda, Physiology Department, Chiba University, Japan, who is also interested in the salt-hypertension relationship. He courteously sent me a reprint of his own work (45) as well as a bulletin of the Ministry of Health and Welfare of the Japanese government (46). From these sources, it was learned that hypertension and fatal cerebral apoplexy are widely prevalent in Japan. But, of great interest is the fact that, in the Prefecture of Akita, where these two diseases are especially common, the *average* daily salt intake (based on the 24-hr. urinary chloride excretion of 268 adults) was 26.3 gm., which is about twice the average Japanese intake and two and a half times that of the American male (7). At corresponding ages, the frequency of hypertension in Akita was approximately twice that of the Japanese population as a whole, and even greater compared with similarly aged Americans. By contrast, in other areas of the Orient where low-salt diets are the rule, hypertension appears to be uncommon.

Therefore, in summary, the evidence that sodium plays a primary role in the causation of essential hypertension in human beings is considerable and is based on: (a) production of hypertension in animals by excess salt feeding, (b) relief of human hypertension, in some cases, by salt restriction, (c) low incidence of hypertension among racial groups and individuals on low-salt diets, and (d) high incidence of hypertension among groups and individuals on high-salt diets.

In view of the preceding data, in another paper (30) I have recommended that for the individual without a family history of hypertension, a maximum intake of 5 gm. sodium chloride (2 gm. sodium) per day be eaten; for those with a family history of the disease, not more than 500 to 1000 mg. sodium chloride (200 to 400 mg. sodium) per day should be allowed.

Early in the seventeenth century, during the age of Shakespeare, Robert Burton wrote his classic book *The Anatomy of Melancholy*. Within the framework of the rather primitive seventeenth century medicine, *melancholy* was an inclusive term for many ailments. In speaking of the dietary causes of melancholy, he said: "Common experience finds salt, and salt meats, to be great procurers of this disease, and for that cause, belike, those Egyptian Priests abstained from salt, even so much as in their bread, . . . that their souls might be free from perturbations." Perhaps he spoke more wisely than he knew!

Summary and Conclusions

The addition of salt (sodium chloride) to food is an ancient practice, although there were vigorous groups which never used added salt in their diets. Current average levels of salt ingestion in most modern societies appear to be well beyond physiologic need and probably represent an induced appetite, much like those of smoking and drinking alcohol. Among groups and individuals in which a low-salt diet is eaten, essential hypertension is uncommon; by contrast, where a high-salt diet is common, hypertension and its complications are frequent. This paper reviews evidence indicating that excess salt ingestion is the cause of essential hypertension. It is recommended that the current levels of salt ingestion be reduced significantly.

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Why do American women live longer than men? The Health Information Foundation says we should find the answer "before American males—especially at age forty-five and beyond—become in effect an underprivileged segment of the population."

Modifying the Fatty Acid Content of the Diet[1]

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Physicians are prescribing diets modified in fatty acids for patients with coronary artery disease. Dietitians will want to know what the fatty acid composition of foods is and how to plan diets low in saturated fatty acids, high in polyunsaturated fatty acids, and others. The authors have planned several regimens illustrating different modifications.

INTEREST IN the types and amounts of fats and fatty acids in the dietary continues. A modification which is receiving attention is that of increasing the unsaturated fatty acids. This has arisen from the demonstration of a reduction of elevated serum total cholesterol in man by feeding highly unsaturated fats in a variety of formula feeding studies (1-4).

In a recent study, Keys showed (5) that a fall in cholesterol can be predicted by the percentage of calories coming from saturated monounsaturated, and polyunsaturated fatty acids in the diet. Control values for serum total cholesterol were based on institutional "house" diets in which 18 per cent of the calories were derived from saturated fatty acids and 4 per cent from polyunsaturated fatty acids. Diets in which the percentage of calories from the saturated fatty acids was lowered and that from the polyunsaturated fatty acids was raised could reduce serum total cholesterol from control values, independent of the percentage of monounsaturated fatty acid calories in the diet or the percentage of total fat calories. Although there is little evidence that a reduction of serum total cholesterol will prevent or lessen occurrences of myocardial infarction, it is considered to be a desirable procedure and hence an increasingly greater use is being made of diet therapy for patients who are thought to have atherosclerosis (6, 7).

[1]Supported in part by grants-in-aid from The John A. Hartford Memorial Fund; The Nutrition Foundation, Inc., New York City; The Albert and Mary Lasker Foundation, New York City; and the Fund for Research and Teaching, Department of Nutrition, Harvard University School of Public Health. Received for publication February 27, 1958.

Present-day concepts in this field have resulted in an increasing number of requests to estimate the fatty acid composition of diets. The purpose of this paper is to provide information which may be of practical use to those who are asked to plan diets and instruct patients in fat and fatty acid modifications. There are several questions with respect to dietary planning which will be reviewed. (a) What are the amounts of fatty acids, particularly the essential fatty acids, in proportion to the total fat or total calories in the "average American diet"? (b) What are the principal sources of essential fatty acids in our diets, and how do vegetable oils vary in essential fatty acid content? (c) How can menus be planned, using ordinary foods, to meet dietary prescriptions for low saturated fatty acids, high polyunsaturated fatty acids, or both?

Fatty Acids in the American Diet

Classification of fatty acids in edible fats and oils can be made according to their degree of saturation. The term "saturated" is used for those fatty acids containing single-bond carbon linkages; "unsaturated," for those containing one or more double-bond carbon linkages. Fatty acids with only one double bond are termed monounsaturated or monoethenoid. Oleic acid is the most common food fatty acid in this category. Those fatty acids with more than one double-bond are called polyunsaturated or polyethenoid. The essential fatty acids linoleic, linolenic, and arachidonic acid are in this grouping. Linoleic acid constitutes the largest proportion of the essential fatty acids in most edible fats and oils.

Few reports of the amounts of fatty acids in the normal American diet have been made. The United States Department of Agriculture has published

TABLE 1 Fatty acid composition of "normal" American diets

SOURCE OF DATA	FATTY ACIDS			
	Total	Saturated	Mono-unsatu-rated*	Poly-unsatu-rated†
	% *calories*	% *calories*	% *calories*	% *calories*
U.S.—retail foods purchased, 1955 (8)	43.6	18.3	18.6	4.5‡
U.S.—retail food available, 1909-13 (11)	32	—	—	4.6
U.S.—retail food available, 1955 (11)#	41	—	—	5.2
Minnesota—institutional house diets (quantitative), 1957 (5)	39	18	17	4
Massachusetts—dietary histories, 1955 (12)	40.7	15.4	17.7	5.1

*Mostly oleic acid.
†Mostly linoleic acid.
‡Linoleic acid only.
#Preliminary data.

(8) information on the over-all availability of fatty acids as determined from the food brought into the household. Data from the entire country were reported and summarized according to four geographic regions. To quote from this publication: "The fat in the diets of the households in the North Central region and in the West contained a greater quantity of saturated fatty acids than in the other two regions [South and Northeast]. Lower levels of oleic acid were estimated to be furnished by the diets of households in the Northeast. Amounts of linoleic acid were slightly higher in the South and West than in the Northeast and North Central regions." It was estimated that 4.95 per cent of the total calories in the Northeast, 4.4 per cent in the North Central region, 4.6 per cent in the South, and 4.9 per cent in the West, and an average of 4.5 per cent of the total calories in all regions came from linoleic acid.

From the data based on food availability tables (9, 10), McCann and Trulson estimated (11) that the food available at the retail level supplied an average of 17.7 gm. essential fatty acids daily for the years 1909–13 and about the same in 1955—18.6 gm. It can be approximated that, of the total calories available in these two periods, 4.6 per cent and 5.2 per cent, respectively, were supplied by essential fatty acids. Keys estimated (5) that 4 per cent of the calories from a "house" diet at an institution in Minnesota were essential fatty acids. Data from this department (12), based on an average of 190 research dietary histories of Italian-American factory workers, show that 5.1 per cent of the total calories are derived from essential fatty acids. Table 1 summarizes this information. These figures are group averages; therefore, variations between individuals can be expected.

TABLE 2 Fatty acid composition of edible plant oils used in the United States (14)

PLANT OIL	FATTY ACIDS		
	Saturated	Monounsaturated*	Polyunsaturated†
	gm./100 gm.	*gm./100 gm.*	*gm./100 gm.*
Coconut oil	91.5	6.0	2.5
Corn oil	11.7	46.0	42.3
Cottonseed oil	25.1	24.7	49.7
Olive oil	10.0	82.8	7.2
Peanut oil	19.0	60.0	21.0
Safflower oil‡	6.1	26.4	67.5
Soybean oil	11.4	28.0	60.6

*Mostly oleic acid.
†Mostly linoleic acid.
‡Used mainly in experimental work.

Foods Sources of Essential Fatty Acids

Information on the essential fatty acid content of foods is limited, and often variations are found between sources. Many factors influence the component acids of dietary fat (13). The composition of a plant oil changes with the variety of the plant, the environment in which it grows, and the processing which the kernel and oil undergo. An animal fat varies with the breed of animal and the type and percentage of fat in the feed. The character of the fat fed to a hen influences the lipids of the eggs produced. Likewise, fatty acids in milk to some extent reflect the ration of the cow (13).

The plant oils differ considerably in fatty acid composition. Table 2 gives the composition of some plant oils used in food preparation (14). Excellent sources of highly unsaturated fatty acid are found in the widely used corn oil and cottonseed oil. These oils contain approximately seven times the amount of essential fatty acids of margarine, nine times that of butter, and ten times that of a hydrogenated shortening.[2] While coconut oil is not an important food in this country, it is used frequently in tropical countries. It is very low in polyunsaturated fatty acids and high in completely saturated acids, particularly lauric acid. The fats and oils of poultry, eggs, and fish are among the best animal sources of essential fatty acids.

Hayes and Rose compiled a food table (15) of the amounts of saturated, total unsaturated and essential fatty acids in the serving portions of some common foods as determined from the available literature. The principal sources of information were Hilditch (13), Holman *et al.* (16), and Chang and Watts (17).

The calories, fat, and fatty acid composition of

[2]Based on communication with Swift & Co., Chicago.

TABLE 3 Calories, fat, and fatty acid intake of five subjects as revealed by research dietary histories

SUBJECT	CALORIES	TOTAL FAT	ANIMAL FAT	FATTY ACIDS		
				Saturated	Monounsaturated*	Polyunsaturated†
		% calories	*% total fat*	*% calories*	*% calories*	*% calories*
A	2025	45	59	15	20	7
B	2100	42	79	17	19	4
C	2680	42	81	17	17	5
D	2730	27	59	8	13	5
E	2640	51	63	18	22	8

*Mostly oleic acid.

†Mostly linoleic acid.

diets of five individuals interviewed regarding their diet histories are presented in Table 3. The histories were obtained from people who were eating according to their normal food pattern. They reveal that, although some of the differences in fatty acid composition lay in the selection of basic protein foods, a large part of the variation was due to the methods of food preparation, and in particular to the differences in the use of cooking fats and oils and salad oils. Only one of these diets provided less than 30 per cent of the calories from fat (diet of Subject D). This was the diet of a forty-six-year-old man; it was low in fat calories largely because he was not a big eater, and 685 of the 2730 calories were obtained from alcoholic beverages. His intake of meat, fish, and poultry was average and of milk and butter was negligible. Cooking oils accounted for most of the vegetable fat. The total fat, nevertheless, amounted to 83 gm.

Two menus in Table 4 demonstrate how the type of fat used in an ordinary diet with no particular fat restriction could account for sizable variations in the fatty acid intake. Each menu contains about 1975 calories and 77 gm. fat, supplying 35 per cent of the total calories. Menu I is estimated to contain 13 per cent of the total calories as saturated fatty acids and 6 per cent as essential unsaturated fatty acids; Menu II, which has similar basic foods, contains 8 per cent saturated fatty acids and 14 per cent of the calories as essential fatty acids. The twofold increase of essential fatty acids in Menu II was possible by substituting vegetable oils for hydrogenated vegetable products and highly saturated animal fat.

The vegetable oil used in the above calculations was a combination of cottonseed and corn oils. In addition to these oils, which can be purchased in the grocery store, the use of a highly unsaturated fat, safflower oil, has been advocated. This oil, a product of the safflower plant grown in parts of the western United States, contains approximately 70 per cent linoleic acid. For research purposes in this laboratory, safflower oil has been (a) used in the manufacture of a type of "ice cream," (b) substituted for butter fat in a "whole milk," and (c) incorporated into a spread[2]. The practicality of such products is unknown.

[2]H. P. Hood & Sons, Boston.

Modified Dietary Plan

In the dietary outline in Table 5 are listed the amounts of basic foods and sugars and fats which might be included in menus containing 2000 calories with the fat 40 per cent of the total calories. The outline is intended only to demonstrate that the percentage of calories from essential fatty acids can be raised without altering dietary patterns appreciably and that a quick estimation of the amounts of saturated and polyunsaturated fatty acids can be made in a menu if a basic food pattern is used and the type of fat is adjusted to the percentage of fat calories in the diet. The type of highly unsaturated oil will determine the total essential fatty acid intake. If, for example, safflower oil is used, 21 per cent of the total calories would then be derived from the essential fatty acids. Other highly unsaturated fats, or combinations of fats, can be used for the fat exchange. Part of the fat might be used to add a small amount of butter fat to the dietary outline to make foods more palatable. As a second example, three-fourths corn oil and one-fourth butterfat are figured. This combinatien provides 11 per cent of total calories as essential fatty acids.

With the first example, about three to four times the percentage of calories from essential fatty acids are included as that obtained in the individual dietary histories as shown in Table 3. To our knowledge, there has been no suggestion as to what proportion of calories as essential fatty acids would prove valuable as a therapeutic measure. These examples merely show how diets can be altered without the use of formula-type or impractical diets.

The diets in Table 4 and the dietary outline in Table 5 were prepared to provide 35 per cent or more of the calories from fat. This was done in view of the generous role that meats and dairy products play in our customary diets. It is noted in Table 1 that about 40 per cent of our total calories are fat calories and in Table 3 that it is not uncommon to find a proportion of one-half to three-quarters animal fat in the total fat. To arrange a diet in which only 25 per cent of the total calories are fat calories would mean less meat and other animal fat foods than many Americans customarily eat. Furthermore, if the intake of linoleic acid is to be doubled on such low-fat diets, most meats and dairy

TABLE 4 **Variations in fatty acid content of two similar menus**

FOOD	AMOUNT	CALORIES	PROTEIN	FAT	SATURATED FATTY ACIDS	ESSENTIAL FATTY ACIDS
		Menu I				
			gm.	*gm.*	*gm.*	*gm.*
Breakfast						
Grapefruit	½ medium	104	1.3	0.5	0.05	0.30
Eggs, scrambled in	one	77	6.1	5.5	1.64	1.48
bacon fat	1 tsp.	42	—	4.7	1.56	0.44
Toast	2 slices	122	3.6	1.8	0.54	0.32
Butter	2 tsp.	72	—	8.2	4.72	0.40
Jelly	1 Tbsp.	55	—	—	—	—
Beverage with sugar	1 tsp.	18	—	—	—	—
Noon meal						
Tomato bouillon	½ c	21	1.0	0.2	0.02	0.12
Halibut, broiled with	3 oz.	131	19.4	5.7	1.79	1.96
butter	1 tsp.	36	—	4.1	2.36	0.20
Baked potato with	1 average	100	2.4	0.1	0.01	0.06
butter	1 tsp.	36	—	4.1	2.36	0.20
Green vegetable salad with	1 serving	10	0.5	—	—	—
French dressing	1 Tbsp.	59	1.0	5.3	0.78	0.50
Crackers	2 square	34	0.7	0.9	0.16	0.49
Fresh grapes	1 serving	55	1.1	1.1	0.11	0.66
Milk, whole	6 oz.	125	6.4	7.1	3.93	0.44
Evening meal						
Baked chicken with	4 oz.	197	24.0	10.1	3.08	3.30
margarine	1 tsp.	36	—	4.1	0.74	0.25
Spanish rice (with bacon fat)	⅔ c.	270	5.4	7.5	2.37	0.95
Spinach, plain	½ c.	23	2.8	0.6	0.06	0.36
Celery	3 pieces	9	0.6	0.1	0.01	0.06
Roll	one	61	1.8	0.9	0.27	0.16
Butter	1 tsp.	36	—	4.1	2.36	0.20
Jam	½ Tbsp.	27	—	—	—	—
Angel cake	1 piece	108	3.4	0.1	0.01	0.06
Frozen strawberries	3 oz.	90	0.5	0.3	0.03	0.18
Beverage with sugar	1 tsp.	18	—	—	—	—
Total*		1972	82.0	77.1	28.96	13.09
		Menu II				
Breakfast						
Grapefruit	½ medium	104	1.3	0.5	0.05	0.30
Egg scrambled in	one	77	6.1	5.5	1.64	1.48
oil	1 tsp.	45	—	5.0	0.93	2.30
Toast	2 slices	122	3.6	1.8	0.54	0.32
Jelly	1 Tbsp.	55	—	—	—	—
Beverage with sugar	1 tsp.	18	—	—	—	—
Noon meal						
Tomato bouillon	½ c.	21	1.0	0.2	0.02	0.12
Crackers	2 square	34	0.7	0.9	0.16	0.49
Halibut, broiled with	3 oz.	131	19.5	5.7	1.79	1.96
oil	1 Tbsp.	124	—	14.0	2.62	6.44
Baked potato	1 average	100	2.4	0.1	0.01	0.06
Green vegetable salad with	1 serving	10	0.5	—	—	—
French dressing	1 Tbsp.	59	1.0	5.3	0.78	0.50
Fresh grapes	1 serving	55	1.1	1.1	0.11	0.66
Milk, skim	6 oz.	65	6.4	0.2	0.11	0.01
Evening meal						
Baked chicken with	4 oz.	197	24.0	10.1	3.08	3.30
oil	½ Tbsp.	62	—	7.0	1.31	3.22
Spanish rice (with oil)	⅔ c.	270	5.4	7.5	1.35	3.51
Spinach, plain	½ c	23	2.8	0.6	0.06	0.36
Celery	3 pieces	9	0.6	0.1	0.01	0.06
Roll	one	61	1.8	0.9	0.27	0.16
Jam	½ Tbsp.	27	—	—	—	—
Strawberry-gelatin chiffon						
pie (with oil)	⅙ of 10-in. pie	273	5.1	9.7	1.77	4.52
Beverage with sugar	1 tsp.	18	—	—	—	—
Total†		1960	83.2	76.2	16.61	29.77

*35 per cent of calories furnished by fat; 13 per cent from saturated fatty acids, 6 per cent from polyunsaturated fatty acid; and 16 per cent from monounsaturated fatty acids (estimated by difference).

†35 per cent calories furnished by fat; 8 per cent from saturated fatty acids, 14 per cent from polyunsaturated fatty acids; and 13 per cent from monounsaturated fatty acids (estimated by difference).

TABLE 5 **Outline of 2000-calorie, 90-gm. fat diet**

FOOD GROUP	AMOUNT	CALORIES	PROTEIN	FAT	FATTY ACIDS	
					Saturated	Poly-unsaturated
			gm.	*gm.*	*gm.*	*gm.*
Egg	one	77	6	5.5	1.64	1.48
Skim milk	2 c.	174	17	0.5	0.21	0.03
Meat, fish, poultry*	7 oz.	367	40	21	8.52	2.50
Fruits and vegetables	5 average servings	240	3	1	0.10	0.60
Bread and/or cereals	3 average servings	227	6.5	1.5	0.34	0.75
Potato and substitutes	2 average servings	220	7	1	0.10	0.60
Sugar and sweets	3 Tbsp.	165	—	—	—	—
Fat†	2 oz.	530	—	59.5	†	†
Total		2000	79.5	90.0	†	†

*Daily averages based on a seven-day food intake. The figures for meat, fish, and poultry are taken from raw weights for 420 gm. chicken, 315 gm. low-fat fish, 105 gm. liver, and 210 gm. each of lean beef, veal, and lamb per week.

†Totals of saturated and polyunsaturated fatty acids may be varied by using 2 oz. safflower oil; or 1½ oz. corn oil plus ½ oz. butterfat as shown below. In each case, total percentage of calories in the diet from fat is 40.

Fat Modification No. 1 with Safflower Oil: 4 Tbsp. safflower oil would furnish 3.63 gm. saturated fatty acids and 40.16 gm. polyunsaturated fatty acids. Total saturated fatty acids for the diet would be 14.54 gm.; for polyunsaturated fatty acids, 46.12. This would provide 7 per cent of total calories from saturated fatty acids and 21 per cent from polyunsaturated fatty acids.

Fat Modification No. 2 with Corn Oil and Butterfat: 1½ oz. corn oil would furnish 5.27 gm. saturated fatty acids and 19.04 polyunsaturated fatty acids; ½ oz. butterfat would furnish 6.96 gm. saturated fatty acids and 0.60 gm polyunsaturated fatty acids. Total saturated fatty acids for the diet would be 23.14 gm.; for polyunsaturated fatty acids, 25.60 gm. With this modification, 10 per cent of total calories would come from saturated fatty acids and 11 per cent from polyunsaturated fatty acids.

products must be restricted rigidly in order to include the polyunsaturated vegetable oils.

Summary

Diets modified in proportions of fatty acids for individuals with coronary artery disease are being prescribed by physicians. Information concerning the fatty acid composition of foods is available.

The amount of polyunsaturated fatty acids in the normal American diet and the distribution of fatty acids in our diets is noted.

The preparation of menus to meet prescriptions for diets low in saturated fatty acids and high in polyunsaturated fatty acids is discussed.

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Dumping Syndrome—Control by Diet

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THAT dietary management of the post-gastrectomy dumping syndrome is the most effective treatment to date has been delineated in a report of a clinical study recently concluded by us (1). This report indicates that a significant number of patients presenting the syndrome respond favorably to dietary control. Essential information is given on the high-protein, high-fat, low-carbohydrate regimens used.

The dumping syndrome has been variously described, but it is generally agreed that the most significant manifestations are post-prandial nausea, weakness, fatigue, diaphoresis, tachycardia, and electrocardiographic changes. The afferent loop syndrome includes also pain and vomiting. Patients with the latter syndrome were not included in our study in order to reduce variables.

It has been noted that two out of three patients undergoing gastrectomy lose weight and suffer from malnutrition, and at least two-thirds of this group fail to regain their ideal weight (2). This ensues following 65 to 75 per cent removal of the stomach, with the Billroth I or II techniques (3). Some writers observe that a near-total gastric resection seems to be a somewhat better tolerated operative procedure, and that weight gain is greatest in patients who have had a total gastrectomy with the creation of a jejunal reservoir (4). Such patients possess a considerable holding capacity, and this function approximates that of a normal stomach (4). Evidence exists that all patients undergoing total gastrectomy reflect nutritional disturbances and that nature fails to compensate for these deficiencies (5).

Protein and Fat Anomalies

A significant and constant finding has been the abnormal physiology of protein and fat in the majority of these patients. One patient reported by Paulson and Jankelson (5) had normal protein excretion six months after surgery. A year later, his protein excretion was abnormal. Numerous metabolic studies have proved that an abnormally large loss of fat in the stools follows any type of resection. Less loss of fat was noted following sub-total resection (4, 5).

Moreno stated (4) that all of his patients reflected increased small bowel motility, the degree of which was ostensibly in direct proportion to the amount of stomach removed. In most patients this acceleration was mainly confined to the upper jejunum, followed by a deceleration in the ileum.

Many previous studies have indicated that various foods are intolerable to patients following gastrectomy, notably milk, milk products, chocolate, and sweets. Other investigators have pointed out the advisability of avoiding these agents and the value of specific dietary therapy and have shown the necessity for a high caloric (principally from fat) diet for increasing and maintaining weight. However, it must be remembered that the rate of fat absorption is reduced in some of these patients (3). The work of these authors has been based on clinical observation and experimental evidence referable to the theories of etiology of the syndrome (2, 6-14). It is also evident that the mechanism involved in controlling the "normal" fat threshold has been changed following gastrectomy, so that the usual satiety value of fat is no longer present (9). It therefore becomes a simple matter to justify to the patient the apparent excessive fat allowance in our regimens. The proportion of fat recommended would conceivably accelerate an already rapid alimentary motility, but it appears that the relatively large allotment of protein tends to counteract to some degree the effect of the amount of fat specified.

There are many theories to explain the weight loss or failure to gain weight after the various operative procedures. One indicts decreased or inadequate caloric intake because of distress following ingestion of a normally adequate meal volume (15). Another implicates derangement in pancreatic function (2), which ostensibly results in fat mishandling and increased loss of fat in the stools. Because bowel motility is apparently accelerated, complete or satisfactory absorption and assimilation of nutrients is further rendered impossible or unlikely.

The stomach reservoir in an individual with a normal stomach makes possible the slow, periodic release of food into the duodenum and normally renders the material isotonic by enzymatic predigestion and dilution. In contrast, the incomplete mixing of food and digestive juices following resection (plus the existent inadequate reservoir) may contribute to the deficiency in weight gain. Moreover, when this natural reservoir is no longer present, rapid emptying occurs, and symptoms appear due to decrease in the blood volume caused by the outpouring of fluid from the jejunal wall in an attempt to maintain isotonicity. It can be shown experimentally that a decrease in the circulating plasma volume, electrocardiogram and blood electrolyte changes, and dumping symptoms occur when a hyperosmolar mixture is introduced into the small bowel, either in the post-surgical patient or the normal individual with a Miller-Abbott tube (16, 17).

Effect of Carbohydrate

Many studies have shown that a carbohydrate meal produces all aspects of the dumping syndrome, particularly diminution of the circulating blood volume, a drop in blood pressure, electrocardiographic alterations, and decreased cardiac output (15) occurring usually within 10 to 30 min. after a meal. A majority of our patients reported symptoms immediately postprandially, or within 30 min. The ingestion of protein results in minimal symptoms, while the effects of fats in the dumping meal are variable and apparently related to the physical form in which fats are taken (15). In our study, it was observed that the fats of low molecular weight were more readily tolerated. The enzymatic hydrolysis of carbohydrate proceeds at a more rapid rate than that of protein, indicating that carbohydrates may be more potent in this respect; nevertheless, the introduction of food in intolerable amounts is contraindicated because of precipitation of severe dumping symptoms (15).

Medwid *et al.* (15) achieved weight gain in one group of patients by varying proportions of carbohydrate to protein to fat—essentially a low-carbohydrate, high-protein, moderate-fat diet. However, weight gain was not sustained after the study and discharge of the patient.

Based on these and previous observations, Hayes developed a diet for use with hospitalized patients (9, 18). McNeer and associates (14) placed subjects on a high-protein, high-fat diet with almost complete relief of symptoms. Although Hayes maintained that hospitalization was essential for individualization of the program, we believed it possible to adjust routines on an out-patient basis, especially in view of the facilities available at the Houston Veterans Administration Regional Office. If we were to find this feasible, then it might be that similar satisfactory results could be elicited by the private physician in his office.

Our own experimental dietary recommendations, precisely prescribed, allowing a very low-carbohydrate (mainly in complex form), high-protein, and very high-fat intake have produced alleviation of symptoms concurrently with weight gain. In most instances the gain in weight has been maintained at relatively stable figures for many months subsequent to conclusion of the study. For some of the subjects, the study was concluded a year and a half ago, and these patients still report successful management of their condition, plus ability now to continue steady employment.

The Subjects

Details on the selection of cases have previously been reported (1). Of eighty-nine subjects interviewed initially, fifty-one exhibited the dumping syndrome. No conclusion was drawn as to the incidence of dumping, because these were random cases selected only for the purposes of evaluating treatment. (Eichhorn and Bowen, in a previous study involving some of our patients, reported [19] an incidence of dumping in 55 per cent of their cases.) For various reasons, only thirty-five of the fifty-one were studied. Due to the fact that some were subjects of Houston Veterans Administration Hospital experimentation; some reflected indifference or lack of interest; and others had transportation difficulties, repeated follow-ups for all fifty-one were not feasible.

Of the thirty-five cases thus screened, indications for operation had been varied, and the type of operation bore no relation to the severity of the symptoms or to the degree of improvement.

Each patient was first seen by the clinic dietitian, who quizzed him according to a previously-prepared questionnaire, which included control elements to assure more accurate interpretation. The dietitian explained that the purpose of the project was to study the patient's reactions to a new diet planned to reduce his symptoms, if possible. The patient was then interviewed by the chief surgeon, who reviewed all available records to determine original indication for the operation, type of procedure, and ultimately the severity of the dumping, if any. If the candidate was considered to be dumping, he was referred back to the dietitian for detailed instructions. At each subsequent visit, the patient was seen by both the surgeon and the dietitian for evaluation.

The Diets

The procedure practiced consisted of providing the patient with successive dietary routines, numbered I, II, and III (see pages 598 and 599). These regimens were to be followed in order, each for one month. Patients then reported to the clinic at the

Dietary Regimen for Patients with Dumping Syndrome Following Gastrectomy

General Instructions

1. Food should be taken as six dry meals a day.
2. Liquids should be spaced 30 to 45 min. from time solid foods are eaten.
3. Avoid milk in all forms, including ice cream and other frozen desserts.
4. Drink only calorie-free beverages.
5. Avoid sugar, sweets, candy, sirup, and chocolate.
6. Avoid gravies and rich sauces.
7. Avoid liquids of all kinds, except those indicated.

Facts to Consider

1. Eat regularly; do not omit any meals.
2. Avoid overloading the stomach at any time.
3. If possible, lie down and relax for 10 or 15 min. before meals.
4. Avoid gulping food; eat slowly and chew well.
5. Drink 5 to 6 glasses water or other liquids daily—but only between meals or feedings.
6. Avoid anger, fear, and excitement as much as possible.
7. Learn to relax.
8. Eat your meals dry. Avoid using even a tablespoon of liquid of any kind with your meals or feedings.
9. Take liberal portions of meat, as long as generous amounts of butter or margarine are used with it. Example: allow at least 1 pat margarine or butter for each ounce of lean meat.
10. Be very accurate only in amounts of carbohydrate allowed.

Routine I

CALORIE RATIO: carbohydrate, 0; protein, 1.5; fat, 5; calories—approximately 2000
APPROXIMATE COMPOSITION: carbohydrate, 0; protein, 115 gm.; fat, 170 gm.

DAILY FOOD ALLOWANCE

Take *nothing* but items shown below.

Eggs—2–3, preferably poached, scrambled, coddled, shirred, hard cooked.
Bacon—2–3 strips, crisp.
Lean meat—beef; yearling veal; lamb; fresh lean pork; chicken; turkey; birds (quail, dove, and so on); ham; venison; rabbit; fish of all kinds, preferably fresh; oysters; shrimp; crabmeat; clams; crayfish. These foods should be broiled, boiled, poached, baked, or grilled—not fried—and oysters may be eaten raw.
Note: *Limited* amounts of the following may also be included, *if tolerated:* baked duck or goose; fresh sweetbreads and brains; luncheon meats*; wieners*; frankfurters*; bologna*; braunschweiger*; Spam, sardines, tuna, salmon.

*Avoid processed meats containing cereal.

Dairy products—margarine, butter. Allow approximately 1 pat margarine or butter for each egg or ounce of meat.
Miscellaneous—salt; may use lemon juice or lime juice on fish, oysters, and so on.
Beverages—none with meals or feedings! Between feedings, spaced 30 to 45 min. from time of eating solid foods, small amounts of cool (not cold) water may be taken if tolerated, or: coffee, tea, limeade, or lemonade *without* sugar or sirup. Use soluble artificial sweetener. A special sugar-free beverage may be made with plain bottled soda water, artificial flavor (such as cherry, root beer, and so on, *not* sirup), and soluble artificial sweetener as desired.

Sample Menu Plan

Morning
2 eggs with 2–3 pats margarine or butter (or more)
2 or more strips of crisp bacon

Mid-morning
3 oz. meat (see list) with 3 pats margarine or butter, if possible

Noon
2 beef patties or hamburger, steak, chops, roast, with 3 pats margarine or butter (or more)

Mid-afternoon
Something from above list with 3 pats margarine or butter

Evening
Same as noon, with 3 pats margarine or butter

Bedtime
Something from list—meat or eggs—with 2 pats margarine or butter

Routine II

CALORIE RATIO: carbohydrate, 1; protein, 1.5; fat, 5; calories—approximately 3000
APPROXIMATE COMPOSITION: carbohydrate, 100 gm.; protein, 150 gm.; fat, 225 gm.

DAILY FOOD ALLOWANCE

Take *nothing* but items shown below. Exactly the same as Routine I with the addition of:

Dairy products—heavy cream, whipping type (30–40 per cent butter fat) in limited amounts: cream cheese
Miscellaneous—take only if tolerated; *be careful!*
Plain or salted nuts of all kinds, such as peanuts, pecans, cashews, almonds, Brazil nuts, filberts, walnuts, pine nuts, pistachios (chew all nuts thoroughly); peanut butter; olives; pimiento

Vegetables—not more than 1 average serving per meal
All kinds—fresh, frozen, or canned (*without* sugar), especially: potatoes in all forms, asparagus, squash, fresh tender greens of all kinds, okra, eggplant, green peas, beets, carrots, string beans, spinach, butter beans, avocados, lettuce hearts, celery hearts, cauliflower (do not overcook)
Cereals—all cooked to thick (not "runny") stage; not more than 1 average serving when allowed.
Cream of Wheat, farina, cornmeal mush, rice, grits, oatmeal, and so on.
Pastes—macaroni, spaghetti, vermicelli, noodles; no excess gravy or sauce.
Breads—not more than *one* slice with each feeding.
All kinds, preferably enriched, day-old white bread, toast, zweiback, soda crackers, Melba toast. NOTE: Commercial bread is made with sugar. When possible, use breads, wafers, and crackers prepared *without* sugar. *Read all labels.* The following may be used as bread substitutions:

Flour	2½ Tbsp.
Rice and grits, cooked	½ c.
Spaghetti and noodles, cooked	½ c.
Crackers	
Saltines (2 in. square)	5
Soda (2½ in. square)	3
Oysterettes (20)	½ c.
Beans, Lima, fresh	½ c.
Beans and peas, dried. cooked—including Lima, navy, red, split peas, cowpeas	½ c.
Corn, sweet	⅓ c.
Parsnips	⅔ c.
Potatoes, white	
Baked or boiled (2 in. in diameter)	1
Mashed	½ c.
Sweet potatoes or yams	¼ c.

Sample Meal Plan

Morning
2 scrambled eggs with 3 pats margarine or butter
1 average slice bread with 1 pat margarine or butter
2 slices crisp bacon
Mid-morning
2 thin slices of bread for sandwich
2 oz. meat (see list) with 1 pat margarine or butter
Noon
4 oz. chicken with 2 pats margarine or butter
String beans, buttered with 1 pat margarine or butter
1 slice bread with 2 pats margarine or butter
Mid-afternoon
2 thin slices bread for sandwich
2 oz. meat or 4 Tbsp. peanut butter, with 1 pat margarine or butter
Night
4 oz. broiled fish with 2 pats margarine or butter
Asparagus tips with 1 pat margarine or butter
1 average slice bread with 1 pat margarine or butter
Bedtime
2 thin slices bread for sandwich
2 oz. meat or 2 eggs with 2 pats margarine or butter

Routine III

CALORIE RATIO: Carbohydrate, 1; protein, 1.5; fat, 5; calories—approximately 3000
APPROXIMATE COMPOSITION: carbohydrate, 100 gm., protein 150 gm., fat, 225 gm.

DAILY FOOD ALLOWANCE

Exactly the same as Routine II with the addition of:

Fruits—all kinds–fresh, frozen, canned (drained), or otherwise processed *without sugar*, especially: orange and grapefruit sections, applesauce, baked apple, ripe or baked bananas, canned pears, peaches, peeled apricots, white cherries, and stewed fruits of all kinds. NOTE: If fruit juice is used, take 30–40 min. *after* solid food has been eaten.

Sample Menu Plan

Morning
2 scrambled eggs with 3 pats margarine or butter
½ slice bread with 1 pat margarine or butter
2 strips crisp bacon
½ c. orange sections (no liquid)
Mid-morning
2 thin slices bread for sandwich
2 oz. meat (see list)
1 pat margarine or butter
Noon
4 oz. chicken with 3 pats margarine or butter
½ c. tender string beans with 1 pat margarine or butter
½ slice bread with 1 pat margarine or butter
½ small banana
Mid-afternoon
2 thin slices bread for sandwich
2 oz. meat or 4 Tbsp. peanut butter
1 pat margarine or butter
Night
4 oz. broiled fish with 3 pats margarine or butter
Asparagus tips with 1 pat margarine or butter
½ slice bread
½ c. applesauce
Bedtime
2 thin slices bread for sandwich
2 oz. meat, 2 eggs, or 4 Tbsp. peanut butter
2 pats margarine or butter

end of each four-week period for recording of any alteration in symptoms, reactions, weight changes, and other data.

All three dietary regimens bear the following specifics: (a) no sugar or sweets in any form, no chocolate or sirup; (b) no liquids with solid foods; (c) six feedings daily; (d) abstinence from milk in all forms; (e) no ice cream or other frozen desserts; and (f) avoidance of gravies and rich sauces.

Our experience indicates that such a dietary regimen must involve omission of offensive foods, correct administration and timing of feedings, and control of the amount of each constituent allowed. Individual attention is essential for practicalizing the procedure and understandably, best results can be obtained through instruction by a qualified dietitian.

With all three regimens, multiple vitamin supplements were given, and in some cases some form of iron. It was recommended that patients take the vitamin concentrate and the hematinic with the middle-of-the-morning or noon feeding to obviate regurgitation and other reactions. The routines are not inadequate with respect to iron, but Routine I is deficient in many of the vitamins.

Included in this report are the three relatively simple dietary plans we recommended. We have reduced these to the briefest form possible for the purposes of this report, including only the few principal specific instructions, items allowed, and a sample feeding routine. The forms we provided patients, however, were somewhat more detailed, with special emphasis on certain aspects of the outline, at times appearing elementary, since our patients represented all intellectual levels, from college graduates to a few unable to read.

Routine I

Routine I (see pages 598 and 599) omitted all carbohydrates and consisted only of protein and fat in the respective caloric ratio of 1.5 to 5. Fats from margarine and butter were preferable since our observation indicates that fats of higher molecular weight were not as satisfactorily metabolized or tolerated by post-gastrectomy patients. This regimen therefore permitted the ingestion of meats, fish, and poultry of all kinds, margarine and butter, crisp bacon, and eggs, preferably hard cooked.

The feedings were taken "dry." No water or other fluid was permitted for 30 min. prior to or following feeding. It was also suggested that extremes of temperature in food and drink be avoided. As previously noted, no milk, sugar, or sweet of any kind was allowed. As individual requirements of the patient were determined, minor variations were introduced. Calories were adjusted to individual requirements.

With the prescribed caloric ratio in mind, a median of approximately 140 gm. protein might be allowed, with 200 gm. fat. This was divided into six feedings of moderate amounts, spaced at least 2 hr. apart, so that sufficient time was allowed between meals for the fluids permitted.

Meats could even include the processed variety types (prepared without cereal), if the patient experienced no distress or eructation from them. We recommended no restrictions on meat. At no time did we suggest more than three or four eggs daily, although some patients took several more each day. All patients were advised that some weight loss might ensue on this routine, due possibly to the high-protein content of the diet, in spite of the liberal amounts of butter or margarine prescribed.

For one month the patient continued this regimen, reporting during the period any deviation from, or infraction of, the prescribed rules. When this test period was concluded, he was recalled for follow-up and recording of the results for comparison with previously-reported symptoms.

Routine II

Next, the patient followed Routine II (see pages 598 and 599) reflecting a carbohydrate-protein-fat ratio of 1:1.5:5. Approximate division of food elements on this regimen was: carbohydrate, 100 gm.; protein, 125 to 150 gm.; fat, 200 to 250 gm. It will be evident that all figures shown are only approximations and present a wide general latitude in order to allow for use by patients reflecting varying conditions and requirements.

This second routine included all items listed on the first plan, plus vegetables and other cereal carbohydrates, but with accurately-stipulated amounts. The items thus added were: vegetables of all kinds—fresh, frozen, or canned (*without* sugar); cereals, all cooked thick, not "runny"; pastes, such as macaroni, spaghetti, and noodles; and breads of all kinds (preferably prepared *without* sugar). Miscellaneous foods allowed with caution were: plain or salted nuts of all kinds, peanut butter, olives, and pimiento. With this regimen, too, six feedings of moderate amounts were recommended.

We instructed the patient not to deviate in any degree from the amounts specified; however, freedom in the ingestion of protein was permitted, as long as there was a proportionate collateral increase in the fat.

Routine III

When these two procedures—each of which continued for one month—were concluded, the third routine was assigned (see page 599). This consisted of the constituents of the previous two diets plus unsweetened fruit—fresh, frozen, or canned. Again the carbohydrate-protein-fat ratio calorically was 1:1.5:5—the same as for Routine II.

In addition to the inclusion of the complex carbohydrates—vegetables and nuts as tolerated—we also allowed heavy cream (whipping type) and cream cheese in limited amounts. The patient was cautioned against augmenting the amount of the complex carbohydrate allowed. It will be noted that no simple sugars, exclusive of those existing naturally in fruits, were permitted.

This last dietary plan was to be continued indefinitely, since it met the basic physiologic requirements of the patient with the possible questionable exception of calcium. Leg cramps reported by some patients suggested a calcium deficiency. Since completion of this study, for certain selected cases we have recommended the addition of calcium lactate.

We emphasize the need for outlining exactly the amount of carbohydrate to be ingested at any one feeding. In one instance, a patient reported recurrence of postprandial nausea, and specific questioning showed that he had taken a whole slice of bread at one feeding instead of the half-slice recommended. Since the stomach's function of releasing small quantities of food into the duodenum was absent, the likelihood of precipitating dumping with even a minimal increase in carbohydrate is evident. We did not restrict the intake of lean protein, but insisted on the patient's taking approximately one pat of margarine or butter for each ounce of meat ingested.

On Routine I ,where bread was omitted entirely, this fat stipulation required the patient's sometimes taking cold meat—hamburger, steak, fish—spread with butter on both sides. This was even true of hard-cooked eggs included in some patients' lunches. However, we experienced no significant difficulty in enlisting the patients' cooperation in this regard, and, as a matter of fact, most perceived an element of humor in the prescription and rather enjoyed their distinction!

Even though the work program of some of the patients precluded their taking time for a mid-morning and mid-afternoon feeding, we actually encountered no problem with this recommendation. Even patients doing assembly-line or other types of work requiring sustained close attention with little or no time off between usual meal hours could stand by their work machine and eat some hamburger, a steak (cut in strips), or wieners (if tolerated), all spread with margarine or butter, and thus provide themselves with the necessary food without actually taking time from the job. We wish to re-emphasize here the importance of rigid adherence to the rules of frequent alimentation.

Discussion

All thirty-five patients included in this study were followed an average of eight months, some for as long as two years. Six months after termination of this study, a questionnaire was sent to each patient to learn whether improvement had continued. It was found that 28, or 80 per cent of the 35 cases were improved, and 7, or 20 per cent, were failures. In no case was a subject considered to be improved unless he volunteered the information that he was. All patients following the prescribed routine who did not report positive improvement were classified as failures.

It was significant that most of the eighty-nine patients interviewed initially who reported no dumping symptoms were arbitrarliy observing dietary restrictions similar to those reflected in our Routine III, although they denied actually following any prescribed diet. Virtually all avoided sweets, ice cream, chocolate, and milk, and stated that if they consumed these foods in any quantity, symptoms appeared. Few patients reported no food incompatibilities. Ice cream and milk were consistently found to be intolerable.

The pursuit of a "bland diet" or obedience to the injunction to "eat anything that agrees with you" was found to be primarily responsible for the absence of improvement and continuation of dumping symptoms in patients on our study. Each had followed for so long a regimen planned to include large quantities of milk and milk products that he believed these were the only items he could really ingest with impunity.

Several patients who had been asymptomatic for several months following rigid adherence to the prescribed regimen noted a return of a few mild symptoms after inauguration of Routine III and found it necessary to alternate Routine I with Routine III in order to enjoy virtually complete relief from symptoms. In other cases, best results were obtained by alternating Routine II with Routine I as occasion demanded.

It is our conviction that patients presenting the post-gastrectomy dumping syndrome can be controlled effectively and satisfactory management can be sustained on an out-patient basis. By appealing to the patient at the desired level, by offering necessary explanations, and by acknowledging the intelligence of each one, it was shown that his cooperation and interest could be elicited and maintained. A sympathetic attitude and sincere interest in the patient are obviously necessary for success with such a program. Throughout this entire study, we were aware that the interest we demonstrated might have had some psychotherapeutic effect.

Some failures would have been avoided perhaps had the subjects been hospitalized initially for regimentation and attention to specific individual needs. Economic restrictions favor out-patient prescription. However, it is helpful for all patients with dumping manifestations to be started as soon as feasible post-surgically on a definite diet.

In individual cases it was found that Routine II can be omitted, which, of course, expedited the return of the patient to an adequate and palatable diet. The advisability of reversion to Routine I on occasion was emphasized in each case, if any difficulties with Routine III were encountered. Those with the most severe symptoms might find it beneficial to use Routine I or II most of the time.

As a result of this study, it is hoped that patients who have undergone gastrectomy may be placed on a correct routine as soon as solid food can be taken safely. Because of the idea of the value and salubrious effect of milk on a "stomach condition" has been underscored for these patients for so many years prior to surgery, it is difficult sometimes to school them to repudiate it. In spite of anticipated unfavorable consequences, they still believe that milk must be beneficial to them. In a cross-section such as this, certain dietary aberrations might be expected. In one instance, one patient exhibited an allergy to eggs. Another had associated gallbladder disease. The physician can readily perceive such difficulties, and adjustments can be effected.

Certain authors have noted that the dumping syndrome is often considered temporary and that it can be expected gradually to disappear. We have postulated that patients in whom the syndrome has been relieved have less difficulty because of their natural inclination to learn what best agrees with them. A diet similar to the one we prescribe is often the result. We feel that by careful professional administration of a correct dietary regimen, a long period of disability accompanied by usually serious symptoms and weight loss, with disqualification for gainful work, may be avoided.

Conclusions

The dumping syndrome is a frequent sequela to gastrectomy, regardless of the type of surgery. Detailed routines—successful in improving or preventing this syndrome in 80 per cent of our patients—are presented.

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Breakfast—A Safety Measure

In a two-year period, three out of four accidents in one of North Carolina's largest textile plants involved workers who had not had breakfast, according to a survey by the North Carolina Industrial Commission.—*Clipped from* U.S. News and World Report, *February 14, 1958, by Mary P. Huddleson, former Editor,* Journal of The American Dietetic Association.

Dietary Survey of Jamaican Children[1]

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DURING A study of the influence of vitamin B_{12} and Aureomycin on the growth of protein-deficient children in Jamaica, a dietary survey was made of a representative sample of the children in order to assist in making a proper and adequate assessment of their nutritional status (1). It was considered that it would be of value to present a detailed report of this survey and to see how this compares with the allowances recommended for tropical countries (2). A considerable amount of work in the nutritional field is in progress in the West Indies, but unfortunately, little evidence of a direct nature about the dietary intake is available. This survey is a contribution towards this deficit.

The survey was carried out on 166 children attending three schools in rural areas in the hills of St. Andrew and St. Thomas, about 10 to 15 mi. from the sea, and three schools on the southeastern coast of the island. Random samples of households having children at the six schools were chosen. No attempt was made to ascertain the economic or social status of the households before selection, but during the study these factors were roughly assessed.

Procedure

The first step was to assemble the parents at a meeting where the project as a whole was explained to them. Their cooperation was asked, and they were requested not to deviate from their customary dietary habits and methods of cooking, or to alter the amounts that would be given to the children. Periodic "surprise" visits were made to check this aspect of the work, but no lack of cooperation was observed. The observer was present throughout the day to check cooking methods and obtain recipes. When the food was served on the child's plate, each individual item was weighed separately, and after the meal, any portions remaining were deducted.

The observations on each subject were spread over a period of seven days. The duration of the whole survey was twelve months, commencing in June of 1952.

The purpose of the survey was to obtain a representative estimate of the dietary intake of the population as a whole. The survey was carried out over a period of a year in order to observe whether seasonal variations were important. It was decided that it would give a better over-all estimate of the population's dietary intake if as large a number as practical was observed for weekly intervals rather than a small number of children for a longer period. Since no marked variation in individual diets was observed for the majority of the children investigated, we feel that the results obtained from the 166 children were reasonably representative of the whole population and that the monthly variations observed in intake are significant.

All food, sweets, and so on taken between meals were assessed by questionnaire. Quantities were then computed and added to those already obtained. School meals were taken into account by measuring samples of the meals as served and then recording an average figure.

Recipes of composite dishes were reconstructed in the laboratory, and from the recorded weights of raw and cooked foods, average conversion factors were estimated. Where weight increase was great,

[1]Supported in part with the aid of grants from Lederle Laboratories, Inc., Pearl River, New York, and Merck and Co., Rahway, New Jersey. Received for publication August 16, 1957.

[2]The authors wish to acknowledge the interest and assistance of Professors P. Gyorgy and J. Stokes, Jr., Department of Pediatrics, University of Pennsylvania; and the continuous help and cooperation of H. Haugton, Director of Education of the Government of Jamaica, and his teaching staff. We should also like to acknowledge the cooperation of the parents and children in the parish of St. Thomas, without whose help this project could not have been undertaken.

TABLE 1 **Food composition figures used in calculating nutritive value of diets**

FOOD	SOURCE OF VALUES	PROTEIN	FAT	CARBO-HYDRATE	CALCIUM	PHOS-PHORUS	IRON	VITAMIN A	THIA-MINE	RIBO-FLAVIN	NIACIN	ASCORBIC ACID
		gm./100 gm.	*gm./100 gm.*	*gm./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*I. U./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Cereals												
Corn on the cob	INCAP (3)	1.8	0.2	8.4	10.0	57.0	0.5	0	0.08	0.08	0.67	11.0
Hominy	Platt (4)	8.5	0.06	78.5	11.0	0	4.0	0	0.05	0.02	0.20	0
Meal	USDA (5)	9.6	3.4	74.7	7.3	177.7	1.77	417	0.27	0.08	1.63	—
Macaroni	USDA (5)	12.8	1.4	76.5	22.0	165.0	1.5	—	0.09	0.06	2.0	—
Rolled oats	INCAP (3)	14.2	7.4	68.2	53.0	405.0	4.5	0	0.6	0.14	1.0	0
Rice												
Brown	USDA (5)	7.5	1.7	77.7	39.0	303.0	2.0	—	0.32	0.05	4.6	—
White	USDA (5)	7.6	0.3	79.4	24.0	136.0	0.8	—	0.07	0.03	1.6	—
Flour												
Baking	USDA (6)	13.4	1.1	72.4	20.0	97.0	2.86	—	0.49	0.26	3.5	—
Counter	USDA (6)	13.4	1.1	72.4	20.0	97.0	1.4	—	0.12	0.07	1.4	—
Whole wheat	USDA (6)	12.4	1.8	72.1	46.0	356.0	3.4	—	0.52	0.12	4.3	—
Cassava	USDA (6)	1.6	0.6	84.6	82.0	132.0	1.9	—	0.06	—	—	—
Dairy products												
Cheese—Cheddar	USDA (5)	23.2	29.9	2.0	673.0	787.0	0.9	1300	0.02	0.41	¶	—
Milk												
Cow's	USDA (5)	3.5	3.9	4.9	118.0	93.0	0.1	160	0.04	0.17	0.1	1.0
Condensed	USDA (5)	7.9	9.0	54.3	273.0	228.0	0.2	430	0.05	0.39	0.2	1.0
Goat's	USDA (5)	3.3	4.0	4.6	129.0	106.0	0.1	160	0.04	0.11	0.3	1.0
Eggs	USDA (5)	12.8	11.5	0.7	54.0	210.0	2.7	1140	0.1	0.29	0.1	0
Fats and oils												
Butterine	local firm*	—	77.0	—	—	—	—	2640	—	—	—	—
Coconut												
Oil	local firm*	—	100.0	—	—	—	—	—	—	—	—	—
Extract	the author's (7)	8.0	71.3	19.6	—	—	—	—	—	—	—	—
Whole	local firm*	4.2	39.2	11.7	—	—	—	—	—	—	—	—
Lard	local firm*	—	100.0	—	—	—	—	—	—	—	—	—
Margarine	local firm*	—	77.0	—	—	—	—	—	—	—	—	—
Miscellaneous												
Sugar—brown	USDA (5)	—	—	100.0	76.0	37.0	2.6	—	—	—	—	—
Cocoa	USDA (5)	8.0	23.8	48.9	125.0	712.0	11.6	30	0.12	0.38	2.3	—
Chocolate	INCAP (3)	8.0	23.8	48.9	125.0	712.0	11.6	0	0.12	0.38	2.3	0
Cane juice	USDA (6)	0.2	0	14.1	19.0	27.0	1.2	10	0.02	0.01	0.1	0
Carbonated water	USDA (6)	—	—	9.0	—	—	—	—	—	—	—	—
Food yeast	local firm†	43.1	2.4	3.0	127.0	—	20.0	—	2.0	5.0	4.0	—
Meat												
Beef												
Fresh	USDA (5)	18.2	18.0	0	11.0	161.0	2.7	—	0.08	0.16	4.4	—
Corned	USDA (5)	15.8	25.0	0	9.0	125.0	2.4	—	0.03	0.15	1.7	—
Chicken	USDA (5)	20.2	7.2	0	14.0	200.0	1.5	—	0.08	0.16	10.2	—
Liver	USDA (5)	19.7	3.2	6.0	7.0	358.0	6.6	43,900	0.26	3.33	13.7	31.0
Mutton—goat	Platt (4)	16.0	9.0	0	11.0	191.0	2.7	¶	0.2	0.27	5.0	—
Pork												
Fresh	USDA (5)	11.9	45.0	0	7.0	117.0	1.8	—	0.58	0.14	3.1	0
Salt	USDA (5)	3.9	85.0	0	¶	0	0.6	—	0.18	0.04	0.9	0
Tripe	USDA (6)	17.6	4.2	0	12.0	144.0	1.0	—	—	—	—	—
Peas and beans												
Broad beans												
Green	INCAP (3)	9.9	0.3	19.9	30.0	134.0	2.5	6.0	0.30	0.20	1.84	30.0
Dry	INCAP (3)	21.7	2.1	34.8	122.0	386.0	25.8	24.0	0.35	0.26	2.58	0
Congo peas												
Green	INCAP (3)	7.2	0.5	22.1	34.0	121.0	1.6	30.0	0.34	0.18	2.32	40.0
Dry	INCAP (3)	23.9	1.7	59.2	129.0	418.0	7.0	12.0	0.39	0.15	2.09	—
Cow peas	USDA (5)	22.9	1.4	61.6	77.0	451.0	6.5	30.0	0.92	0.16	2.2	2.0
Red peas												
String	INCAP (3)	2.1	0.2	6.5	51.0	45.0	1.1	132.0	0.08	0.11	0.56	18.0
Dry	INCAP (3)	23.9	1.7	59.2	129.0	418.0	7.0	12.0	0.39	0.15	2.09	—
Peanuts	INCAP (3)	27.2	49.2	16.3	64.0	468.0	2.6	12.0	0.62	0.11	21.0	0
Fruit												
Banana	INCAP (3)	1.2	0.2	26.4	9.0	27.0	0.5	84.0	0.04	0.05	0.69	12.0
Grapefruit	INCAP (3)	0.6	0.2	10.5	21.0	25.0	0.6	12.0	0.04	0.01	0.2	45.0
Guava	INCAP (3)	1.0	0.6	16.5	13.0	27.0	0.9	0.03	0.04	0.04	1.46	145.0
Guinep	INCAP (3)	1.4	0.1	22.2	8.0	36.0	0.7	0.04	0.02	0.02	0.76	6.0
Lemon	INCAP (3)	0.4	3.7	4.0	13.0	14.0	1.3	0.01	0.01	0.02	0.08	32.0
Mango	INCAP (3)	0.5	0.2	15.5	10.0	12.0	0.4	504.0	0.04	0.04	0.42	77.0
Melon	INCAP (3)	0.3	0.7	4.8	4.0	7.0	0.5	12.0	0.7	0.07	0.16	6.0
Orange	INCAP (3)	0.4	0.2	10.2	7.0	13.0	1.4	12.0	0.05	0.01	0.17	59.0
Papaya	INCAP (3)	0.6	0.3	10.2	17.0	14.0	0.4	114.0	0.03	0.04	0.38	51.0
Pineapple	INCAP (3)	0.5	0.3	15.0	20.0	10.0	0.8	0.02	0.08	0.03	0.17	89.0
Starapple	INCAP (3)	1.0	1.9	15.9	14.0	18.0	0.4	0.01	0.03	0.01	1.13	9.0
Tangerine	INCAP (3)	0.8	0.2	12.0	33.0	17.0	0.3	66.0	0.09	0.03	0.21	33.0
Starchy vegetables												
Breadfruit	USDA (6)	1.7	0.3	26.2	33.0	32.0	1.2	40.0	0.11	0.03	0.9	29.0
Cassava	INCAP (3)	1.0	0.2	35.7	31.0	58.0	0.7	6.0	0.07	0.04	0.68	39.0
Coco	INCAP (3)	1.9	0.3	34.5	10.0	62.0	1.4	0	0.13	0.03	0.68	11.0
Plantain	INCAP (3)	1.1	0.2	31.4	6.0	37.0	0.9	216.0	0.06	0.03	0.6	17.0
Potato, white	INCAP (3)	2.1	0.2	17.2	5.0	42.0	1.0	0	0.09	0.03	1.6	27.0
Sweet potato	INCAP (3)	1.1	0.2	28.0	20.0	44.0	0.09	233.0	0.12	0.04	0.76	39.0
Yam	INCAP (3)	2.2	0.2	20.7	4.0	52.0	0.6	0	0.12	0.02	0.52	11.0
Yampie	INCAP (3)	2.2	0.3	29.6	13.0	46.0	0.8	0	0.13	0.04	1.37	7.0

TABLE 1, Concluded

FOOD	SOURCE OF VALUES	PROTEIN	FAT	CARBO-HYDRATE	CALCIUM	PHOS-PHORUS	IRON	VITAMIN A	THIA-MINE	RIBO-FLAVIN	NIACIN	ASCORBIC ACID
		gm./100 gm.	*gm./100 gm.*	*gm./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*I.U./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Non-starchy vegetables												
Ackee	JAS (8)	4.45	17.0	13.05	—	—	—	—	—	—	—	—
Avocado pear	INCAP (3)	1.7	9.1	6.1	14.0	39.0	0.7	72.0	0.06	0.13	1.67	16.0
Beet	INCAP (3)	1.6	0.1	9.9	14.0	32.0	0.9	0.03	0.02	0.04	0.29	5.0
Cabbage	INCAP (3)	1.7	0.2	5.8	49.0	30.0	0.5	12.0	0.06	0.04	0.28	49.0
Callaloo	INCAP (3)	4.3	0.5	6.0	289.0	77.0	30.3	2196.0	0.11	0.3	1.21	64.0
Carrot	INCAP (3)	1.0	0.1	8.6	31.0	35.0	0.5	3240.0	0.05	0.04	0.6	8.0
Cho-cho‡	INCAP (3)	1.0	0.2	7.3	12.0	30.0	0.5	6.0	0.02	0.04	0.49	21.0
Cucumber	INCAP (3)	0.8	0.1	3.4	13.0	28.0	0.4	0.01	0.03	0.07	0.22	15.0
Lettuce	INCAP (3)	1.2	0.2	3.0	49.0	30.0	1.8	228.0	0.07	0.09	0.43	13.0
Okra	INCAP (3)	2.2	0.4	9.0	84.0	52.0	1.2	18.0	0.09	0.06	1.22	32.0
Pumpkin	INCAP (3)	0.6	0.1	6.8	9.0	21.0	0.5	36.0	0.04	0.02	0.40	9.0
Susumber#	INCAP (3)	0.6	0.4	8.0	4.0	18.0	0.6	—	0.06	0.05	0.44	66.0
Tomato	INCAP (3)	1.0	0.3	4.5	7.0	28.0	0.9	228.0	0.08	0.04	0.61	26.0
Turnip	INCAP (3)	2.0	0.1	6.0	29.0	48.0	0.4	12.0	0.06	0.03	0.38	83.0
Watercress	INCAP (3)	2.3	0.3	2.1	99.0	45.0	4.4	1.0	0.08	0.13	0.80	41.0

¶=negligible amount.
*Soap and Edible Products Ltd. (SEPROD LTD.), Kingston.
†Colonial Food Yeast, Ltd., Kingston.
‡A herbaceous vine climbing by tendrils. The fruit, pale green in color and slightly rough on the outside, contains a single seed. The flesh of the fruit is boiled and eaten as a vegetable.
#A prickly shrub with velvety leaves and white, potato-like flowers borne in lateral cymes. The berries, about ¼ in. in diameter, resemble green peas and when cooked as a vegetable have a bitter taste.

as in the cooking of rice, weighed samples of the raw foods were cooked in the laboratory using the same method employed by the homemaker and the weight of the cooked samples again used to obtain a conversion factor. Allowances were also made for the increased water content of cooked starchy and non-starchy vegetables, but no adjustments were made for increased loss of heat-labile vitamins and soluble minerals either in the washing or cooking processes. In the case of fried foods and some local fats, simple analyses of fat and moisture were made.

All foods were reduced to their basic components and allowance was made for moisture content, e.g., bread was recorded as a percentage of the corresponding flour. In the case of foods which gain weight on cooking, e.g., rice, the formula $\frac{A\,(100 - B)}{100} \times \frac{100}{100 - C}$ was used to determine the raw weight, with

A = weight of food eaten
B = moisture content as eaten
C = moisture content of raw material.

So called "baking flour" was enriched by government order; thus all bakery goods bought from shops—bread, bun, "bullah," biscuit, and cake—were assumed to be made from this type of flour. An inspection of the sacks of flour sold in most of the shops in the area showed it to be the "counter flour" variety, i.e., unenriched. All home-made flour dishes—fritters, dumplings and porridges—were therefore assumed to be of this type.

Various tables of the food values of tropical foods were employed in obtaining the nutritive values of the diet, but all values were those for the edible portion of the raw food. The values used and the sources from which they were obtained are given in Table 1.

In the original data received for analysis, the caloric value of each food item had been recorded from the tables used. Since many different tables were employed involving varied and in some cases unknown factors for the calculation of the fuel values, it was thought more accurate to discard these figures and to calculate the energy value of the total diet of each child using Atwater's figures of 4 calories per gram of protein and carbohydrate and 9 calories per gram of fat.

The children were divided into six age groups, each group comprised of children not more than six months younger than the lowest age and not more than five months older than the highest age. One child was younger than the limit of the selected age group for the lowest age group and his data were discarded.

Results

Table 2 shows the percentages of calories supplied by the carbohydrate, protein, and fat for each age group. Table 3 presents the average daily nutritive intake compared with Nicholls' recommended allowances of each group. The caloric value of the diet in all age groups was lower than that recommended. However, it was noticeable that there was relatively little increase in the quantity of food eaten as the children grew; thus the diet provided an increasingly lower percentage of the recommended allowance. The range was from 97 per cent for the children between seven and eight years old to 65 per cent for girls thirteen to seventeen years old, and 68 per cent for thirteen- and fourteen-year-old boys. This low caloric value was mainly due to the low level of fat in the diet, which provided 16 to 20 per cent of the caloric intake instead of the usual 30 per cent found in many dietaries. The percent-

TABLE 2 **Percentage of calories derived from carbohydrate, protein, and fat**

GROUP	CARBOHYDRATE		PROTEIN		FAT	
	Average intake	Per cent total calories	Average intake	Per cent total calories	Average intake	Per cent total calories
	gm./day		*gm./day*		*gm./day*	
Children						
7 and 8 years old	265	68	48	12	34	20
9 and 10 years old	266	71	43	11	30	18
Girls						
11 and 12 years old	279	73	43	11	26	16
13 to 17 years old	288	71	46	11	33	18
Boys						
11 and 12 years old	284	70	47	11	34	19
13 and 14 years old	305	71	49	12	32	17
15 to 19 years old	405	71	65	12	44	17

age of calories from protein was also low, 10 per cent or less. Consequently, the proportion of calories from carbohydrate was high. This is not surprising, since bread, flour, root vegetables, and sugar form the bulk of the dietary on the island.

Examination of Table 3 shows that the children in the seven-to-eight-year age group were obtaining over 80 per cent of their allowances for all except three nutrients: calcium, riboflavin, and vitamin A. They were getting 19 per cent of their calories as fats, as against 15 per cent or less among the older children.

The diet of the children of nine years and older was low in protein and niacin as well as calcium, riboflavin, and vitamin A. A low level of these nutrients was particularly marked among girls from eleven years old and upwards, and among the boys of thirteen and fourteen. These groups also obtained a marginal supply of thiamine and their food consumption in terms of total calories showed a great shortage—only about 67 per cent of the recommended total. The number of boys in the thirteen- to nineteen-year-old group was small, and the results may therefore not be representative.

The calcium value of the diets of all the children was markedly low. Only two children from one family received calcium in amounts equal to Nicholls' recommendations, and this was supplied mainly in the form of cow's milk. These two children were given about 1 pt. daily. Furthermore, the true calcium intake from the diet is likely to be lower than the calculated amount, as losses in cooking have not been included. No attempt has been made in this report to assess such losses except to note that they are likely to be from starchy roots and fruits which, when not being roasted or cooked in soup, are boiled in large quantities of water which is discarded after cooking. Callaloo (a type of spinach) is also handled in this manner when it is to be combined with salted cod fish. This vegetable is a good source of calcium and is widely used by the poorer classes, often as a substitute for meat. No estimate was made of the calcium content in the drinking water.

The protein supplied by the children's dietary in all age groups was not only low but in the majority of cases was deficient in first-class protein, some families especially in the Aeolus Valley eating no meat throughout the record period and only small quantities of fish, eggs, or milk. In Figure 1 are presented graphically the caloric and protein intakes of these children in relation to the time of the examination. These results indicate that caloric and protein intakes were lowest in the winter months.

Losses of thiamine would also occur in the cooking process. It is doubtful, therefore, whether the dietary supply of this vitamin is adequate, especially as the compound values are only marginal and in some cases slightly below the recommended level. Then, too, a great percentage of the calories is derived from carbohydrates, which would increase the thiamine requirements. Much of the dietary thiamine, riboflavin, and niacin is contained in the enriched baking flour imported into Jamaica and used in breadmaking. The amounts of nutrients added to the flour are:

Thiamine	2.2—	2.5	mg. per pound
Riboflavin	1.2—	1.5	mg. per pound
Niacin	16 —	20	mg. per pound
Iron	13 —	16.5	mg. per pound

There is, therefore, a real possibility that the other components of the B-complex group, such as pyridoxine, pantothenic acid, and so on, were in very short supply in these children's dietary.

The ascorbic acid intake, too, was certainly lower than the computed value. However, as the lowest value was more than 300 per cent above the recommended standards and as this vitamin is supplied mainly in the form of citrus and other fresh fruits eaten raw, there is no real danger of insufficiency.

For vitamin A, however, although the average daily intake of vitamin A was low for all age groups, there were periods when large quantities of this vitamin are ingested. This is shown clearly in Figure 2 where the high points occurred in April, May, and June. These three months represent the height of the

TABLE 3 Average daily nutrient intake compared with Nicholls' (2) recommendations for tropical countries

GROUP	NUMBER OF SUBJECTS	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
Average Intake of Survey Subjects										
			gm./day	*gm./day*	*mg./day*	*I.U./day*	*mg./day*	*mg./day*	*mg./day*	*mg./day*
Children										
7 and 8 years old	15	1556	48	0.29	11	1420	1.0	0.7	8	75
9 and 10 years old	52	1509	43	0.28	14	1563	0.9	0.6	8	104
Girls										
11 and 12 years old	26	1522	43	0.26	13	1546	0.9	0.6	8	138
13 to 17 years old	20	1632	46	0.26	13	1292	1.0	0.7	9	89
Boys										
11 and 12 years old	34	1623	47	0.30	14	1739	1.0	0.7	9	126
13 and 14 years old	15	1708	49	0.29	15	1544	1.0	0.7	9	145
15 to 19 years old	3	2278	65	0.44	19	4113	1.1	1.0	11	215
Nicholls' Recommendations (2)										
Children										
7 and 8 years old		1600	60	0.75	7	2500	0.6	1.0	10	20
9 and 10 years old		1700	60	0.75	8	2500	0.7	1.0	12	25
Girls										
11 and 12 years old		2200	65	0.75	10	2500	1.0	1.2	15	25
13 to 17 years old		2500	70	1.0	12	3000	1.2	1.2	15	30
Boys										
11 and 12 years old		2000	60	0.75	10	2500	1.0	1.0	12	25
13 and 14 years old		2500	70	1.0	12	3000	1.2	1.2	15	25
15 to 19 years old		3000	80	1.0	12	4000	1.5	1.5	20	30

mango season when large quantities of this fruit are eaten and consequently, the intake of vitamin A as carotene is approximately 40 per cent higher than the recommended allowance. The body stores of vitamin A built up during these months are probably sufficient to prevent deficiency of this vitamin to the extent that clinical symptoms would appear.

The dietary of the two areas of the island revealed little for comparison. The only outstanding difference was in the amount of fresh fish eaten. As expected, the children from the three schools on the coast ate fresh fish more often and in larger quantities than those from the hill areas. There was small variation between the quantities of the staple foods eaten in either area.

The children's meals seldom varied, the same foods being eaten every day. These foods consisted mainly of starchy roots and fruits which are usually grown in the family plot. The dietary history of one of the children has been outlined in Table 4. The meal pattern of the other children was quite similar, variations being mainly in the quantity of first-class protein consumed.

The staple foods of the diet are outlined in Table 5, together with the average amount eaten weekly and the average number of days on which the food was eaten. Baking flour was taken mostly in the form of bread, bun, and bullah (a type of cookie made with dark brown sugar and baking powder), while the counter flour was used to make dumplings (mainly a flour and water mixture, often with cornmeal or whole wheat flour added to the counter flour) which was cooked in soups. "Johnny cakes" of the same mixture, with the addition of baking powder or egg or both, are fried in fat such as coconut oil and served with codfish or with the main

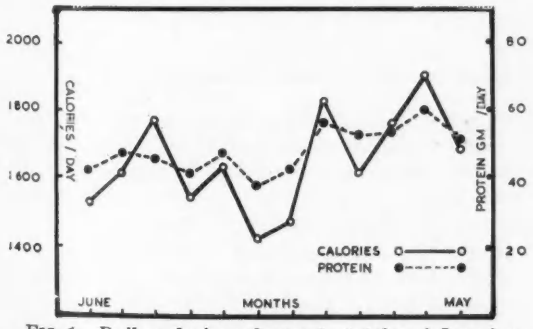

FIG. 1. *Daily caloric and protein intake of Jamaican children during this survey.*

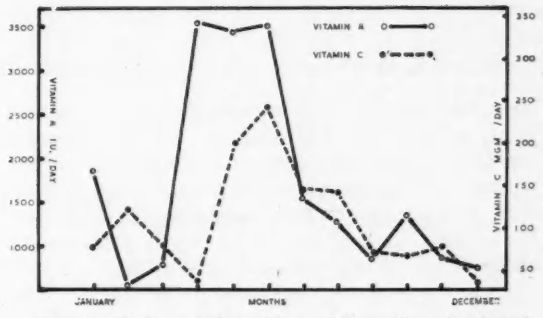

FIG. 2. *Daily intake of ascorbic acid and vitamin intake over a one-year period.*

TABLE 4 **Food eaten by one child in study in a week**

BREAKFAST		NOON MEAL		EVENING MEAL	
Food	Amount	Food	Amount	Food	Amount
		Sunday			
Cocoa	¼ oz.	pork	2 oz.	none	
Coconut milk	8 oz.	rice and peas	20 oz.		
Sugar	2 oz.	cho-cho	½ oz.		
Savory callaloo	4 oz.	candy			
Johnny cakes	7 oz.				
		Monday			
Bush tea	8 oz.	fresh fish	1½ oz.	fresh fish	2 oz.
Sugar	2 oz.	"turned" cornmeal	8 oz.	coconut custard	1 tsp.
Crackers	2 oz.			Johnny cakes	8 oz.
				mint tea	8 oz.
				sugar	2 oz.
		Tuesday			
Bush tea	8 oz.	home-made ginger		salt fish	½ oz.
Sugar	2 oz.	bread	4 oz.	susumber	3½ oz.
Crackers	1½ oz.	lemonade with sugar	2 oz.	yam	5½ oz.
				dumplings	6½ oz.
		Wednesday			
Mint tea	8 oz.	fried fresh fish	2 oz.	cornmeal porridge	
Sugar	2 oz.	"turned" cornmeal	12 oz.	made from:	
Crackers	1 oz.			cornmeal	2 oz.
				condensed milk	½ oz.
				water	
		Thursday			
Bush tea	8 oz.	gingerbread	3 oz.	bush tea	8 oz.
Sugar	2 oz.	sugar beverage		sugar	1½ oz.
Johnny cakes	4 oz.	made from:		white bread	1½ oz.
		sugar	1½ oz.		
		water			
		Friday			
Bush tea	8 oz.	"turned" cornmeal	4 oz.	curried fried fish	2 oz.
Sugar	1½ oz.	sugar beverage		coconut custard	1 Tbsp.
Crackers	¼ oz.	made from:		flour dumplings*	14 oz.
		sugar	1 oz.		
		water			
		Saturday			
Bush tea	8 oz.	"bullah"	3 oz.	salt fish	½ oz.
Condensed milk	¼ oz.	sugar beverage		ackee and susumber	3 oz.
Sugar	1½ oz.	made from:		dumplings	14 oz.
Bread	2¼ oz.	sugar	2 oz.		
		water			

*Dumplings eaten at other times were made from a mixture of cornmeal (one part) and flour (three parts).

meal. Cornmeal is used to make porridge or dumplings, or it is "turned." Meal is "turned" by cooking large quantities of the dry cereal with small amounts of water to produce a solid cake. Seasonings, such as scallion and tomatoes, are added during cooking. It may then be served in this way or sliced and fried in coconut oil until crisp.

Peas and rice are popular and are often cooked together. Peas may also be cooked as soup or stewed with varying amounts of fat salted pork, salted beef, or pig's tail. The main varieties of peas eaten during this survey were Congo (pigeon) peas, red peas (kidney beans), cow peas, and broad beans. In one area, black-eyed peas were used. When in season, these peas are eaten in the fresh state and the excess is dried to be consumed later.

Two or more of the starchy roots and fruits are eaten at the main meal which may also include rice or rice and peas. Among the starchy vegetables, green bananas and yams are the most popular with

TABLE 5 **Average weekly intake of staples over an entire year**

FOOD	JANUARY (13 children)	FEBRUARY (7 children)	MARCH (10 children)	APRIL (7 children)	MAY (6 children)	JUNE (18 children)	JULY (14 children)	AUGUST (31 children)	SEPTEMBER (13 children)	OCTOBER (15 children)	NOVEMBER (19 children)	DECEMBER (12 children)	YEARLY AVERAGE	AVERAGE DAYS PER WEEK
	gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	
Flour														
Baking	446	333	428	516	414	385	387	366	361	444	204	501	385	6
Counter	509	278	367	320	233	328	843	407	512	487	467	499	455	5
Cornmeal	94	83	64	80	107	125	23	187	140	241	164	78	111	2
Peas	310	967	315	196	741	99	140	116	106	123	103	93	202	3
Rice	351	339	346	498	323	397	344	295	273	351	156	306	318	3
Green bananas	302	256	478	289	640	73	34	281	393	97	811	198	310	2
Yam	627	1057	472	244	320	186	92	216	138	204	379	321	310	3
Cocoa	110	473	44	149	234	75	184	90	38	33	100	84	111	1
Sweet potatoes	81	242	412	182	197	179	141	94	54	59	382	151	170	2
Breadfruit	78	150	21	28	54	96	2	200	640	172	60	28	141	1
Cassava	32	32	102	.....	86	46	262	1	16	.....	261	21	744	1
Coconut oil	154	103	130	185	129	109	76	65	129	102	67	117	103	5
Ackee	73	49	5	.....	6	5	10	66	12	9	114	53	41	1
Fish														
Salted	122	170	141	75	72	79	93	80	84	96	118	132	101	3
Fresh	161	.....	53	224	40	79	52	31	126	75	35	44	70	1
Meat	223	214	220	348	331	234	62	116	64	193	48	140	157	2
Eggs	3	24	28	45	.....	7	19	3	.....	16	14	.....	13	..
Milk														
Fresh (cow's and goat's)	892	1075	148	416	481	143	456	409	258	123	621	20	395	3
Condensed	62	64	144	137	32	82	81	34	94	165	27	94	78	2

sweet potatoes and cocos (a yam introduced from the East Indies, now used in Jamaica to thicken soups or as a vegetable) a close second. Breadfruit and cassavas are seasonal commodities and are eaten in large quantities when in season. It is worth while to note that there is no real decrease in the quantity of main starches, i.e., yams and green bananas eaten during the breadfruit and cassava seasons, but cocos and sweet potatoes are taken less often and in smaller amounts. This was particularly noticeable during the breadfruit season of August to October. The ackee (a West African tree naturalized in the West Indies. The fruit is a red, succulent capsule splitting into three valves, exposing one seed in each. The pale yellow fleshy aril at the base of the seed is the part eaten as a vegetable in Jamaica) is also seasonal. There are three seasons per year, each being short, but the quantities taken during each season are usually large. Ackees are eaten mainly with codfish, but may also be curried and eaten with boiled rice.

As already stated, callaloo is often used as a substitute for meat, being boiled, drained, and then mixed with fried scallion and chili peppers to form a savory dish.

The main fat used by the families surveyed was coconut oil, either in the refined form or as homemade coconut extract, the fat content of which compares favorably with butter and which also contains some protein and carbohydrate.

In only a few families was meat eaten often or in large quantities. However, the quantities recorded in Table 5 also included salted pork and pig's tail, of which only a small percentage is lean meat and which is very popular and therefore a good proportion of the recorded amount. The protein value of the diet was not therefore as high as the recorded quantities would suggest.

As already shown, fresh fish is mainly eaten by the coastal families, although salted codfish is a common food throughout the area. It is often taken as a meat dish in conjunction with ackees or callaloo. Salted mackerel, shad, and red herring are also well liked and 18 per cent of the recorded amount for salt fish was made up of these and other types of salted fish.

Little storing is done in Jamaica. Sufficient food for one meal only is usually bought at the local shops, people sending out before each meal even for sugar, in the urban areas. In the rural areas, the cultivators bring in enough for the day only. Ice boxes were rare, even in the highest economic group encountered—the school teachers' houses. The only method of preserving food encountered was the "corning"—salting—of beef and pork.

Condensed milk was used in preference to fresh, because of its superior keeping qualities.

About two-thirds of the families observed had kitchen huts adjoining the main house. In this would be a raised hearth often of mud, although stone was used. Those who had no kitchen hut used heaps of stones in the open as a hearth. Wood—either raw

or in the form of charcoal—was used for fuel. Rarely a paraffin stove—either of the pressure type (Primus) or an open non-pressure stove ("Blue Boy")—was used. Paraffin lamps—the hurricane type or pressurized lamps—were used for lighting.

Water was rarely piped to the house. Most families on or near the coast had a stand pipe within 500 yd. of the house. Those living inland often had to walk further for piped water or rely on river water.

Cooking vessels were mostly iron pots, although an occasional enameled saucepan was seen. No allowance was made in the calculations for any iron absorbed from the pot. The "coal pot" was frequently used. This is a shallow iron bowl raised from the ground by an iron base, coal (charcoal) being burnt in the bowl and the food placed either directly on the charcoal—as when roasting breadfruit—or in a small saucepan. Spoons and knives, but rarely forks, were the implements used, tin mugs and enamel plates being the "crockery."

Some families take their milk supply solely as fresh cow's milk or as condensed milk, while others use both. Goat's milk is used in fair amounts by a few families, usually where the animals are owned. In this survey there were twenty-four children drinking goat's milk, the quantity amounting to 9 per cent of their total fresh milk supply.

Vegetables were conspicuously in short supply in all the diets. Callaloo was the main vegetable, as it was cheap. Citrus fruits, mangoes, and papayas were eaten in large amounts during their seasons, but when fruits were scarce and therefore expensive, they were absent from the dietary.

In the early study (1), the measurements made on growth and clinical examinations indicated a low nutritional status.

On the whole, the main barriers to good nutrition among the children appeared to be their poor economic status and the food "fads" of their parents.

Summary

A dietary survey was carried out on 166 Jamaican children between the ages of seven and sixteen for a period of twelve months. The duration of each individual assessment was seven days. When the results of the survey are compared with Nicholls' recommended allowances for tropical countries, the comparison shows that the Jamaican diet was low in protein, calcium, the B-vitamins, and vitamin A. The diet was predominantly carbohydrate, and the fat content was low.

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Improving Management's Policies

The highest praise that I can give the Connecticut hospitals is to tell you that no one has ever intimated that improvement is not both necessary and desirable in dietary departments. Management policies were found to be the weakest area.

If the professional dietitian is to become a better supervisor and manager, she must be proficient in bringing about change. No improvement is possible unless those involved feel that they have responsibility for carrying out the change because they helped to plan it. When employees know their roles in dietary organizations and are aware of their importance, we find the best professional relationships. Do your cooks and other food handlers know precisely how their work contributes to the attainment of the goals of the dietary department in particular and to the objectives of the hospital in general?

Dietitians have been accused of demonstrating a low tolerance of criticism. My recent experience has disproved this accusation. All leaders must learn to accept criticism without display of emotionalism or defensiveness. Dr. James Goddard says that one must not expect perfection of an associate, but must know how to handle matters so that another person's weaknesses are not involved in the types of professional activities required of that person.—*Jane Hartman, Food Service Specialist, Connecticut Hospital Association, New Haven, speaking before the New Jersey Dietetic and Hospitals Associations in November 1957.*

Effect of Hormones on Composition of Chicken Meat[1]

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Fattening of chickens with hormones or hormone-like substances brings the question of the effects on food composition into focus. In this study, diethylstilbestrol implantation significantly increased the fat content of the chicken meat. Lesser effects were found on the protein and moisture content.

THE EFFECT of feeding various fattening rations on cockerels of several ages has been reported (1, 2). These studies indicate that the fat and water content of chicken meat, particularly that of the dark meat, can be markedly influenced by the diet. Protein content of the meat was found to remain fairly constant.

The use of synthetic estrogen-like compounds has attracted the attention of several investigators. It has been observed that meat from diethylstilbestrol-treated White Leghorn cockerels contained approximately three times as much fat as non-treated cockerels (3). A more recent and thorough study (4) has been reported on the effects of various hormones and hormone-like substances on the chemical composition of broilers. Of those substances tested, only diethylstilbestrol and thiouracil significantly increased carcass fat and reduced protein content of chicken meat.

A review of the literature indicated that additional information was needed as to the effect of hormonization on raw and cooked carcass composition of chickens of both sexes and at different ages. It was for this purpose that the experiment reported here was conducted.

Procedure

Groups of approximately seventy-five Cornish cross chicks were raised for study at each age level. Observations were made at six, ten, and fourteen weeks of age. Each group of chickens was divided into four treatment lots: (a) hormonized males, (b) control males, (c) hormonized females, and (d) control females. Each group was raised in a separate pen. The chickens to be slaughtered at six weeks of age were implanted with 10 mg. diethylstilbestrol[2] in paste at three weeks while those to be slaughtered at ten weeks, were implanted with 15 mg.[3] at seven weeks. Those to be slaughtered at fourteen weeks were implanted with 15 mg.[3] at eight weeks and again at eleven weeks.[4] The implantation procedures and management practices recommended by the manufacturer of the diethylstilbestrol paste product were followed in all cases.

When the chickens reached the required age, they were killed by severing the jugular vein. The carcasses were then sub-scalded, picked on a mechanical picker, and pinned by hand. After evisceration, the carcasses were packaged in an evacuated polyvinylidene film, frozen and stored until ready for use.

To prepare samples, the frozen carcasses were removed from the freezer and allowed to thaw overnight at room temperature. Each carcass was split in half with one half used for uncooked and the other half for cooked samples. The halves to be cooked were wrapped in aluminum foil and placed in an oven at 325°F. Cooking time was 1½ hr. for the six-week-old birds, 2 hr. for the ten, and 2½ hr. for the fourteen. A sample of dark and light meat was taken from each cooked and each raw

[1]Journal Paper No. 1106 of the Purdue University Agricultural Experiment Station. This work was supported in part by Mattox and Moore, Inc., Indianapolis. Received for publication October 24, 1957.

[2]Sold commercially as "Tendawate 539."
[3]Sold commercially as "Tendawate 537."
[4]Sold commercially as "Tendawate 15."

TABLE 1 Percentage of moisture in chicken meat, as affected by age, sex, and hormonization

TYPE OF MEAT	MOISTURE CONTENT			
	Male birds		Female birds	
	Hormonized	Not hormonized	Hormonized	Not hormonized
Six-Week-Old Chickens				
	%	%	%	%
Uncooked				
Light	74.90	76.67	75.39	75.08
Dark	74.05	76.07	75.15	75.99
Cooked				
Light	65.53	65.27	64.60	64.56
Dark	62.08	64.71	61.79	65.11
Ten-Week-Old Chickens				
Uncooked				
Light	75.49	75.33	75.02	76.17
Dark	74.16	75.74	74.59	76.19
Cooked				
Light	65.91	66.65	62.14	62.76
Dark	63.45	65.75	59.95	61.06
Fourteen-Week-Old Chickens				
Uncooked				
Light	74.87	75.96	72.83	75.66
Dark	72.18	75.20	71.65	75.31
Cooked				
Light	67.12	66.57	66.52	65.74
Dark	64.14	65.48	63.82	64.40

half-carcass. The light meat sample consisted of the breast muscle with the skin and subcutaneous layer of fat removed, while the dark meat sample consisted of the muscles of the thigh and drumstick, treated in a like manner. Each sample was run through a grinder[5] three times. The first run was made with the control set at 6, and the other two runs at a speed setting of 10. After grinding, the samples were sealed in polyethylene packages and frozen. These samples were removed from the freezer, thawed, and analyzed as convenient. Following the method of Hebert and Brunson (5), samples were weighed into filter paper, rolled into cylindrical packages, and tied with cotton thread.

For moisture determination, the samples were placed in a vacuum oven at 29 in. of mercury vacuum and a temperature of 104°C. until they reached a constant weight. The time required was approximately 16 hr. Percentage of moisture was calculated by the difference in wet and dry weights.

After the moisture determination, the dried samples were placed in a Goldfish extractor and extracted with ethyl ether for 4 hr., on high heat. The ether was then driven off the samples by placing them in an oven for a short time. Samples were cooled in a desiccator and then weighed. Fat was calculated by difference in net sample weight before and after extraction. All fat values were calculated as a percentage of the net wet sample weight.

[5] Kitchen-Aid, Model 3-C.

Nitrogen was determined by the macro-Kjeldahl method using the dry, ether-extracted samples. Protein was calculated by multiplying N $\times$ 6.25. All protein values were calculated as a percentage of the net wet sample weight.

Results and Discussion

Data from moisture, ether extract, and protein determinations were classified according to cooked and uncooked meat. These were treated in separate statistical analyses as there was particular interest in the effects of the factors studied on chicken meat before and after cooking. For the chemical analyses, some subclass numbers ranged from thirteen up to twenty. For ease of statistical analysis, excess values were randomly discarded, leaving thirteen observations in each subclass. All means are, therefore, based on thirteen chickens.

MOISTURE CONTENT

Both age and hormonization had a highly significant effect (.01 level of probability) on moisture content of uncooked chicken meat when averaged over all other factors. As seen in Table 1, of the three ages studied, six-week-old chickens contained the highest percentage of moisture. Percentage of moisture averaged 75.09, 75.34, and 74.21 for six-, ten-, and fourteen-week-old chickens, respectively. Hormonized chickens contained 74.19 per cent moisture as compared with 75.83 per cent for non-hormonized chickens.

These highly significant differences existed in cooked meat as well. It is noteworthy that there was a differential amount of moisture loss between the different ages during cooking. Moisture percentages for six-, ten-, and fourteen-week-old chickens were 64.21, 63.47, and 65.47 respectively. Thus it is apparent that less moisture was lost during cooking from fourteen-week-old chickens or that the cooking was not carried to the same degree of "doneness." Only in cooked meat did moisture content vary significantly due to sex of the chicken. Meat from male chickens contained 65.23 per cent moisture as compared with 63.54 for females. The highly significant differences that existed after cooking indicates that approximately 1½ per cent more moisture was lost from females during cooking than from males. As the females were smaller, they would be overcooked as compared with males cooked for the same time. In both instances of uncooked and cooked meat, light meat contained a greater amount of moisture than dark meat. This difference, though small, amounted to 0.64 per cent in uncooked meat and 1.80 per cent in cooked meat and proved to be highly significant.

ETHER-EXTRACTABLE MATERIALS

The percentage of ether-extractable materials in uncooked chicken meat was significantly (.05 level

TABLE 2 Percentage of ether-extractable materials in chicken meat, as affected by age, sex, and hormonization

TYPE OF MEAT	ETHER-EXTRACTABLE MATERIALS			
	Male birds		Female birds	
	Hormonized	Not hormonized	Hormonized	Not hormonized
Six-Week-Old Chickens				
	%	%	%	%
Uncooked				
Light	3.86	0.64	1.71	1.52
Dark	7.61	4.61	4.80	4.62
Cooked				
Light	6.51	3.02	4.28	4.90
Dark	11.67	6.79	9.61	6.62
Ten-Week-Old Chickens				
Uncooked				
Light	1.35	0.51	1.92	1.02
Dark	6.87	4.45	6.14	4.24
Cooked				
Light	3.77	2.15	6.06	4.20
Dark	9.98	6.46	11.53	8.17
Fourteen-Week-Old Chickens				
Uncooked				
Light	2.14	0.67	5.34	2.00
Dark	9.47	5.85	9.65	5.74
Cooked				
Light	3.20	1.83	3.77	3.57
Dark	10.80	6.60	9.89	8.06

of probability) affected by age of the chickens. These data are given in Table 2. Fourteen-week-old chickens contained an average of 5.06 per cent ether-extractable materials; six- and ten-week-old chickens contained 3.67 and 3.31 per cent, respectively. As will also be noted in Table 2, hormonization increased ether-extractable content in uncooked meat by 2.05 per cent. Confirming the results of Hebert and Brunson (5), the effect of hormonization was significant on males but not on females. The sex of the chicken did not significantly influence the ether-extractable content of uncooked meat. Uncooked dark meat contained 4.25 per cent more ether-extractable materials than uncooked light meat.

Each factor studied had a highly significant effect on ether-extractable content of cooked meat. Again reference is made to Table 2. Percentages are based on cooked weight of the meat, thereby causing these values to be larger than in uncooked meat. Six-, ten-, and fourteen-week-old chickens contained 6.57, 6.54, and 5.96 per cent ether extract. As observed above in the case of moisture, sex showed a significant effect on ether-extractable content of cooked meat. Meat from male chickens contained 6.06 per cent ether extract compared with 6.72 per cent for females. The administration of hormone significantly increased the ether-extractable content of cooked meat from male chickens. As noted in uncooked meat, cooked meat from females did not show a significant increase. Meat from hormonized chickens contained 7.59 per cent or 2.39 per cent more ether extractable materials than non-hormonized chickens. The greatest difference existed between light and dark meat, dark containing 8.85 per cent and light, 3.94 per cent.

TABLE 3 Percentage of protein in chicken meat, as affected by age, sex, and hormonization

TYPE OF MEAT	PROTEIN CONTENT			
	Male birds		Female birds	
	Hormonized	Not hormonized	Hormonized	Not hormonized
Six-Week-Old Chickens				
	%	%	%	%
Uncooked				
Light	21.18	22.63	22.71	22.59
Dark	19.08	19.35	19.64	19.32
Cooked				
Light	28.40	31.91	30.77	30.68
Dark	25.34	28.09	27.72	27.74
Ten-Week-Old Chickens				
Uncooked				
Light	23.26	23.27	23.13	23.56
Dark	18.62	19.55	19.20	20.55
Cooked				
Light	30.99	31.59	31.80	32.22
Dark	26.76	27.76	27.92	30.09
Fourteen-Week-Old Chickens				
Uncooked				
Light	23.56	22.88	23.22	22.57
Dark	18.22	18.68	20.64	19.48
Cooked				
Light	29.87	30.68	28.87	30.96
Dark	25.17	27.26	25.37	28.42

PROTEIN CONTENT

Protein content of uncooked chicken meat not only varied, as commonly observed, with age of chicken but appeared to have a somewhat inverse relationship with fat content of the meat. These data are presented in Table 3. Chickens six, ten, and fourteen weeks of age contained 20.81, 21.39, and 20.96 per cent protein, respectively, in uncooked meat. The difference between the first and second values was significant. In contrast to moisture and ether-extractable content of uncooked meat, protein content was significantly affected by sex. This difference was small, however, amounting to only 0.46 per cent in favor of the females. Significant treatment differences existed between hormonized and non-hormonized chickens. Those having received the hormone treatment contained 20.88 per cent protein or 0.35 per cent less than non-hormonized chickens. Light meat contained 22.75 per cent protein compared with 19.36 per cent for dark meat. As in the above instances, these values were obtained by averaging over-all factors of age, sex and hormonization.

Cooking had little effect on the pattern of protein

content as found in uncooked meat. For obvious reasons, percentage protein appears greater after cooking. Denaturation of protein occurs during cooking primarily due to the heat effects, but this apparently does not interfere with nitrogen measurement by the procedure used. Ten-week-old chickens contain slightly, yet significantly, more protein than the other two ages. These percentages were 28.83, 29.88, and 28.33 for six-, ten-, and fourteen-week-old chickens, respectively. Meat from female chickens contained 29.38 or 0.74 per cent more than males. Cooked meat from non-hormonized chickens contained 29.77 per cent protein or 1.52 per cent more than meat from hormonized chickens. The difference in protein content of light and dark meat, amounting to 3.44 per cent, was highly significant.

Summary

Male and female chickens, six, ten, and fourteen weeks of age were treated with diethylstilbestrol in paste. Both light and dark meat in uncooked and cooked conditions was chemically analyzed for moisture, ether extract and protein content.

Percentage of moisture of uncooked and cooked meat was affected by age and administration of hormone. Generally, moisture content in uncooked meat decreased as age of chicken increased. Hormone administration also decreased the moisture content. Sex did not influence moisture content of uncooked meat, but in cooked meat, males contained a higher percentage. Light meat contained more moisture both before and after cooking than dark.

Materials removed by ether extraction were greatest in fourteen-week-old chickens in both uncooked and cooked meat. In all instances, treatment with diethylstilbestrol increased the ether-extractable content of meat. The percentage of ether extract was not affected by sex in uncooked meat, but after cooking, meat from female chickens contained a higher percentage. Dark meat contained more ether-extractable materials than light meat, both before and after cooking.

Protein content appeared to be somewhat inversely related to ether-extractable content. Meat from ten-week-old chickens contained the largest percentage of protein before and after cooking. The influence of diethylstilbestrol was evident, both before and after cooking the meat, by decreased protein content. Meat from female chickens contained a higher percentage of protein than meat from males.

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Feeding Method Can Affect Veal Tenderness

Tenderness of veal can be influenced by the method of calf feeding, according to tests conducted by Flora Hanning, University of Wisconsin home economist. However, the feeding method had little or no effect on the juiciness of the veal or the weight lost during cooking.

Only one of four feeding methods tested produced more tender veal than the others. That was liberal whole milk feeding with a copper and iron supplement. The other methods tested were: liberal whole milk feeding without the supplement, limited whole milk feeding, and feeding of milk replacer.

Miss Hanning made juiciness, tenderness, and cooking-loss tests on carefully prepared samples of veal loin and chops. Loins were roasted to an internal temperature of 175°F., while chops were browned in a skillet for 2 min. at 475°F. and then steamed in an oven to an internal temperature of 180°F.

Several methods were used for judging tenderness and juiciness. Both characteristics were judged by a panel of home economists. A device which measures the amount of force needed to cut through the meat furnished another test of tenderness. The amount of power needed to grind meat in an electric grinder provided another measure. Juiciness was also tested by measuring the amount of juice pressed from meat when pressure was applied.

Other researchers have previously noted that veal from calves given the liberal whole milk with iron and copper supplement was a brighter red color than other veal.—*From What's New in Farm Science, University of Wisconsin Agricultural Experiment Station Annual Report Part I, Bull. 529, January 1958.*

Plate Waste in a School Lunch[1]

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AS A PART of a cooperative study of the nutrition of school children in the North Central region, a survey was made of the eating habits of 710 Ohio school children nine to eleven years of age (1). The results showed that the diets of the younger children more often conformed to the Recommended Dietary Allowances of the National Research Council than did those of the older ones. In a subsequent longitudinal study, the plate waste of approximately 200 children ranging in ages from six to fourteen years was observed as a measure of food acceptance in the school lunchroom. Thus information was obtained on the eating habits of both younger and older children. The amount of food returned by these children form the basis of this report.

Food waste in school lunchrooms is, of course, costly from the dollars and cents standpoint. More important, however, is the fact that returned food means the children are not getting the nutrients the lunch was planned to provide. An effort should be made through nutrition education and improved food management to reduce this waste. With savings effected, a nutritious lunch could be supplied to more children at no additional cost.

Several explanations might be advanced for plate waste in the school lunch: the servings may be too large; the food may be unattractive in appearance and unfamiliar to the children; or the environment may not be conducive to good eating habits. Returned food could also be related to the health of individual children, the amount of exercise, and the influence of other children or teachers on food habits, as well as a number of other things.

In a study of thirty-nine schools in different parts of the country, Dreisbach and Handy (2) found that food preferences differed from school to school. The percentages of pupils with waste for a single item in three schools were 3, 12, and 21. These investigators found that milk return was low.

Working on the problem of adjusting the size of serving to the age of the child, Augustine *et al.* (3) reported that plate waste was small. Grades 1 to 3 had the largest per-portion amount of plate waste and grades 4 to 6 the smallest. The students liked sandwiches, main dishes, and desserts best. Over half the time the children in all grades drank all of their milk. The lowest percentage of children returning milk was in grades 4 to 6.

Mirone *et al.* (4) reported that plate waste was reduced among first and second grade children when the quantity of food was adjusted to the age of the child, but the waste was excessive for grades 3 to 7.

Method

Food returned from the Type A school lunches served in an Ohio public elementary school was weighed for a total of twenty-eight days in a period from October 1954, to May 1955. Records were kept for nine days in October (Period I), for eight days in November (Period II), and for eleven days in April and May (Period III). Approximately 200 children in grades 1 to 8 participated in this school lunch.

The data presented here show similarities as well as differences in the menu waste during these three periods. Information is also provided on food returned by different age groups in different periods of the school year.

COLLECTION OF PLATE WASTE

Returned food was collected in tin cans, weighed on a Hanson scale, and the net weight calculated. Inedible parts, such as apple cores, orange rinds, and banana skins, were not included in the waste, but baked potato skins were since they were edible and many children did eat them. Returned milk was collected separately.

The weight of the lunches for children in each of the eight grades was calculated as the sum of the mean weights of individual food items on the menu.

[1]Contribution No. 21, Subproject 2, of the North Central Regional Cooperative Project NC-5, Nutritional Status and Dietary Needs of Population Groups. Ohio Agricultural Experiment Station, Wooster, Journal article No. 86-57, Project No. Hatch 61. Received for publication December 23, 1957.

TABLE 1 Frequency of serving protein-rich foods, vegetables, and fruits in three periods

FOOD	TIMES SERVED		
	Period I	Period II	Period III
Protein-Rich Food			
Ready-to-eat meats (examples: wiener, bologna)	1	2	4
Ground beef (examples: patties, meat loaf)	2	1	0
Creamed and barbecued meats	1	4	2
Meat substitutes (examples: cheese, peanut butter, beans)	3	3	4
Meat combinations (examples: chili, beef stew)	2	1	2
Fruits and Vegetables			
Raw and frozen fruits	4	4	3
Cooked or canned fruits	3	1	6
Raw vegetables (examples: tossed salad, carrot sticks)	4	5	7
Cooked vegetables			
Potatoes	2	2	4
Green or yellow	1	6	6

Five portions of each item were weighed to determine the mean weight. Size of servings of protein-rich foods and vegetables varied with the grades, and the mean weights of these food items were determined for each size of serving.

The number of children participating in the lunch by grade was recorded. The waste per child was obtained by dividing the waste in pounds by the number of children participating. This was then calculated as a percentage of the weight of a lunch. The calculations were made for lunches including milk and without milk. Milk was well accepted, but the portion that was returned was collected by grades to observe possible differences in amounts among the children of various ages.

The calculated percentage of food returned, as reported here, may vary from the actual waste, although it is probable that the difference is small. Children were allowed second servings on some items but not on all. They did not always eat all of the seconds, and total weight of food returned included any left-overs from these additional servings. The routine of serving and lack of personnel made it impossible to obtain an accurate accounting of the second helpings. For this reason, the weight of the lunch used in the calculation was the sum of the mean weights of a single serving of each food item. In the opinion of the authors this variation does not alter the over-all picture which is discussed here.

ANALYSIS OF THE MENUS

Milk, bread, and table spread were fairly constant from day to day in the school lunch menu pattern, but the serving of vegetable and/or fruit varied as to kind and combination. The protein food appeared either as a separate item or in combination with other foods of the main-dish type.

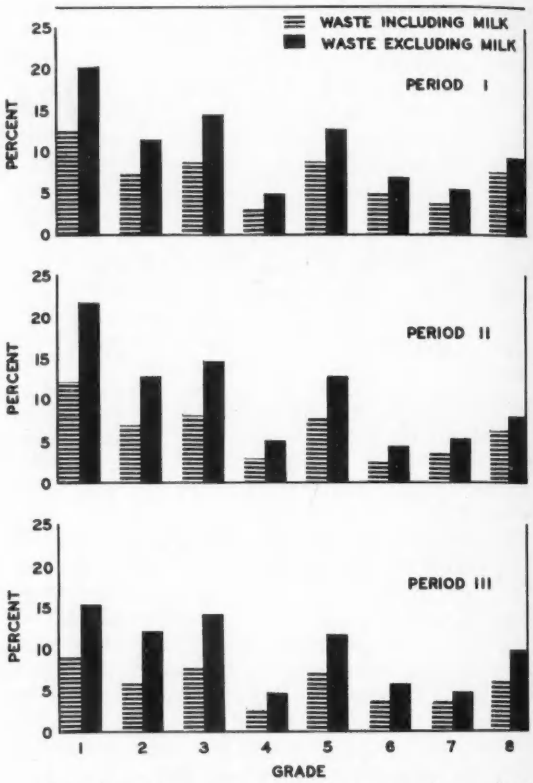

FIG. 1. *Average percentage of plate waste from school lunches by grade and period.*

The menus used were analyzed to determine the frequency of serving different types of protein foods and fruit and vegetables for the periods studied (Table 1). In general, vegetables were served more frequently toward the end of the school year (Period III) than at the beginning. This increase was due in part to greater use of green and yellow vegetables in the lunches as part of a nutrition education program. Canned or cooked fruits were also used more frequently in Period III than in the other two. Toward the end of the school year, the lunchroom manager planned menus to utilize canned fruit on hand that had been donated to the school from government surplus commodities.

Results and Discussion

PLATE WASTE INCLUDING MILK

The percentage of food returned, including milk, for each grade varied little from period to period, with the exception of the first grade, but tended to decrease as the school year progressed for all grades (Fig. 1). The small differences that do exist might be expected, since the menus were not identical for all three periods.

TABLE 2 **Milk returned by grade and by child in three periods**

GRADE	PERIOD I				PERIOD II				PERIOD III			
	Servings	Waste per grade	Waste per child	Waste based on amount served*	Servings	Waste per grade	Waste per child	Waste based on amount served*	Servings	Waste per grade	Waste per child	Waste based on amount served*
		oz.	*oz.*	%		*oz.*	*oz.*	%		*oz.*	*oz.*	%
1	198	34	0.17	2.12	164	23	0.14	1.75	253	11	0.04	0.50
2	231	30	.13	1.62	207	8	.04	0.50	262	3	.01	0.12
3	265	14	.05	0.62	224	17	.08	1.00	275	25	.09	1.12
4	207	6	.03	0.38	183	0	0	0	241	0	0	0
5	241	46	.19	2.38	218	46	.21	2.62	293	49	.17	2.12
6	126	15	.12	1.50	112	1	.003	0.04	179	14	.08	1.00
7	201	19	.10	1.25	193	20	.10	1.25	247	55	.22	2.75
8	197	73	.37	4.62	181	60	.33	4.12	257	36	.14	1.75

*8 oz. were served.

The percentage of food returned was highest for the first grade for all periods, but the percentage dropped in Period III to a figure in line with that of children only slightly older. Reduction in the percentage of waste by the first grade as the school year advanced may have been due, in part, to the adjustment of children to (a) school routine, (b) the form and variety of foods served, and (c) to the size of servings.

The mean percentages of waste for all grades were 7.0, 6.4, and 5.8 for Periods I, II, and III, respectively. These were only about one-third of the percentages of waste reported by Mirone *et al.* (4).

PLATE WASTE EXCLUSIVE OF MILK

Milk was returned less frequently and in lesser amounts by all grades than any other food. Average amounts of milk returned per grade and child in each of the three periods are shown in Table 2. Dreisbach and Handy (2) and Augustine *et al.* (3) also reported good acceptance of milk.

By weighing separately the small amount of returned milk, the percentage waste of all other foods in the menus could be evaluated more critically by periods and grades. The percentages of waste excluding milk were larger than those including it (Fig. 1). This was due to the relatively small amount of milk returned and the relatively large proportion of the weight of lunch contributed by milk.

The largest percentage of food waste, exclusive of milk, was found in Period II for six of the eight grades. The smallest percentage occurred in Period III for five of the eight grades, in Period I for one grade, and in Period II for the remaining two grades. In general, percentages of food waste for Periods I and II were approximately the same and slightly higher than those for Period III. Examination of the percentages of milk waste in Table 2 shows that, in general, more was wasted in Period I than in Period II; hence, the larger percentage of plate waste was found in Period I when milk was included, but in Period II when it was excluded.

The first grade was the only one having a noticeable amount of waste. The pattern by grades was the same regardless of whether milk was included. The fourth, sixth, and seventh grades tended to have less waste than the others. Mirone *et al.* (4) found most waste among grades 3 to 7, whereas Augustine *et al.* (3) reported least plate waste among grades 4 to 6.

TABLE 3 **Ranges in percentages of plate waste, including milk**

GRADE	RANGE IN PLATE WASTE		
	Period I	Period II	Period III
	%	%	%
1	7.5—18.0	7.8—15.1	3.3—14.5
2	2.5—11.4	4.4— 9.6	2.6—12.3
3	2.5—18.2	5.3—10.1	3.2—13.0
4	0.6— 5.8	0 — 6.8	0 — 5.7
5	3.0—18.8	5.1—11.1	2.6—15.4
6	0 —11.1	0 — 5.9	0.6— 7.1
7	1.2— 5.6	0.6— 7.6	0.5— 8.6
8	1.2—12.0	3.2—13.7	4.1—11.6

VARIATIONS IN PLATE WASTE WITHIN PERIODS

Percentages of food returned varied somewhat, not only from grade to grade and period to period, but also within periods for a given grade. For example, in Period I, the percentages of food returned by the first graders varied from 7.5 to 18.0 (Table 3). Examination of the menus provides further insight into this food waste by grades and periods.

Six menus, two from each of the three periods, which were representative of comparatively large and small amounts of total food returned, are presented in Table 4. The menu that resulted in minimum waste for certain grades was not necessarily the one that gave the least waste in other grades. The same was true for the selection of a menu showing maximum waste for certain grades.

Bologna, ground chicken, and wiener sandwiches were well liked by the majority of the children, whereas meat loaf, baked ham, and barbecued beef sandwiches were less popular. This observation is substantiated by percentages of plate waste from menus containing these items as shown in Table 4. Other items on the menus were generally well liked,

TABLE 4 **Percentages of total plate waste from six menus by grades and by periods**

GRADE	PLATE WASTE					
	Period I		Period II		Period III	
	Menu 1—ground bologna sandwich*	Menu 2—meat loaf†	Menu 3—ground chicken sandwich‡	Menu 4—baked ham#	Menu 5—wiener sandwich¶	Menu 6—barbecued beef sandwich‖
	%	%	%	%	%	%
1	7.5	18.0	15.1	11.4	3.3	14.5
2	2.5	8.2	6.6	9.6	2.6	6.5
3	2.5	18.2	5.3	9.6	6.0	8.6
4	0.6	2.9	4.4	2.3	0.6	4.1
5	3.0	18.8	6.2	11.1	6.0	8.1
6	3.0	2.8	2.3	5.9	1.8	3.0
7	1.2	3.6	0.6	5.4	2.4	0.5
8	1.2	11.2	5.7	3.2	5.4	4.1

Other items on menu:
*Buttered kidney beans; peach half; carrot strips; milk.
†Mashed potatoes; molded vegetable salad; bread and butter; milk.
‡Buttered green beans; butterscotch pudding; milk.
#Scalloped potatoes; buttered broccoli; peach half; bread and butter, milk.
¶Scalloped corn; celery and carrot strips; pear half; milk.
‖Buttered green beans; carrot strips; grapefruit sections; cookie; milk.

except for molded vegetable salad served with the meat loaf.

Comparisons of the percentages of waste on all six menus for all grades re-emphasize the fact that the fourth, sixth, and seventh grade children left less food on their plates than those in the other grades even when less popular foods were served.

Summary

Measurement of plate waste is one of several ways of learning more about the food habits of school children. Lunchroom managers may use such information as an indication of the acceptance of food served and be alert to changes needed to improve acceptance and reduce waste.

The following are conclusions drawn from information obtained in this study:

Children in the first grade had more plate waste at the beginning of the school year than they did later in the year.

Children in the first three grades ate proportionately less than did the older children. Older children varied in their eating habits from grade to grade. At all ages there were wide variations in food acceptance from day to day, related in some cases, but not all, to a particular food served.

Milk was well liked by all children.

In subsequent papers information will be presented on over-all plate waste among these same children at a period one year later and of waste of individual foods.

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The Term "Dietitian"

As early as 1906, controversy about the term "dietitian" raged at the Lake Placid Conference on Home Economics, as indicated from this quotation from the *Proceedings:*

"Need of a better term than dietician for an institutional food expert was briefly discussed. Among terms suggested were eufagist (euphagist) to which the chief objection is that it would mean the eater rather than the provider; dietist, which is the main entry in the *Standard,* dietician being given as a variant; and refectioner as the correlative of the recently revived 'refectory.' Refector was proposed as shorter and better formed. All terms formed on 'diet' were pronounced objectional because of their hospital atmosphere. Suggestions for a better word are invited."—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

CURRENT COMMENT

Cook for Quality . . . Eat for Health[1]

MARGARET L. MITCHELL

Vice President—Food Production,
The Stouffer Corporation,
Cleveland

TO COOK for quality means to prepare food with care—to cook it and serve it as though you personally were serving it to your own family and friends, whose health and love you cherish. Cooking for quality means giving full attention to every detail of food preparation and taking pride in its service—and pride, too, in the enjoyment it provides. Cooking for quality is not a hit-and-miss job; it requires the attention of top management every day. Quality food service is the result of concentrated effort on the part of management, and is attained only when management recognizes its importance and is willing to give the time and attention required for its production.

I know there is probably one obstacle in your minds already—the time factor. Where can it be found? My only answer is to analyze your own schedule and put the important part of your responsibilities first. This would put the task of supervising the details of food production and service right up at the top of the list—and where else does it belong? Close supervision of cooking and the job of checking for quality won't take all your time, either. You will still be able to cover your other responsibilities, if you plan the use of your hours carefully and train your organization accordingly.

There is no magic formula in achieving quality food, but there are a few key points which are important in a *cooking-for-quality* program.

Standard Recipes

A standard recipe file is the point from which controls in cooking for quality begin. A recipe file should be complete—not just a file of bake-shop recipes. Recipes for meat cookery, fish cookery, poultry, vegetables, salads, sauces, and soups are all important too, and too often they are overlooked.

Roast meats should be cooked at a definite oven temperature, and with the use of a meat thermometer to a definite inside temperature. Do you do this? If not, you must be relying on the judgment of your cook, and this is not accurate. You cannot guess the doneness of meat, nor is the fork test accurate. Overcooked meat is dry and tasteless; undercooked meat is objectionable, and in the case of pork, may be injurious to health.

Quality meat does not result from guess-work in cooking. Only by the use of temperature controls can you roast meat for quality and be sure of it each time.

Vegetables should be cooked by recipe with an exact time in the steamer specified, so that the vegetables are at just the right degree of doneness to capture their full taste and preserve their nutritive value. Or the vegetables should be cooked in an exact amount of water for a precise time, so that the finished product is tender, full of natural flavor enhanced only by specific amounts of salt, sugar, or other seasonings.

Chicken should be cooked in exact amounts of water and simmered at 180°F., so that it is moist, tender, and juicy when done. If chicken is boiled, juices are driven out of the meat, resulting in a dry, fibrous, sub-standard product, from which no quality product can be made.

Turkey should be roasted at low temperature—breast down, foil covered, or cheese-cloth covered—to an exact inside temperature. Basting the bird is necessary also, so that the finished turkey meat will be moist, tender, and flavorful.

Sauces and gravies should be made by recipe, not by guess. Because cream sauce is the basis for many supper dishes, it is important that a top-quality product be made—one that is smooth and creamy and just the right consistency to blend with added ingredients. Only the use of a good recipe assures this kind of sauce every time.

A standard recipe file must be complete if it is to serve its full purpose. Look at your file; note your poultry recipes, meat recipes, fish recipes, vegetable recipes, salads, and so on, and see how complete they are. You have everything to gain in the use of a standard recipe file:

(a) Improved quality and more consistent quality.

(b) No frustration if a cook leaves suddenly, because with the use of recipes, the new cook can produce the same products, and quality service to your patients continues.

(c) Improved cost controls, because guess-work is omitted.

(d) A food production system of which you can be proud.

A complete file of standard recipes is a first requisite in a program of cooking for quality. I cannot emphasize it more. But even good recipes can fail if food products are not handled with care.

[1]Presented at the 40th Annual Meeting of The American Dietetic Association in Miami, on October 23, 1957.

Good Procedures in Handling Food

There are right and wrong methods in the handling of all foods. Most foods are perishable; they require careful handling in order to retain full nutritive values and maximum flavor. You cannot mistreat food and expect it to taste good when served.

Foods in general, whether raw or cooked, deteriorate with long storage. Vegetables dehydrate and lose flavor, and meats and poultry dehydrate. Fish loses its fresh flavor, and cooked foods can take on undesirable "ice box" flavors. Plan to have raw foods as fresh as possible for cooking. When storage is necessary, see that foods are refrigerated promptly and under the right condition.

Frozen food can be mistreated by using improper methods of thawing. For example, fish fillets can be thrown into warm water for quick thawing. This simply draws flavor and juices out of the product, and no cooking method or recipe can overcome this damage. The same is true of fryers, or even whole chickens. A quality cooked product cannot be made from a damaged raw product, and forced thawing methods can cause such damage.

Cooking by temperature is a procedure which is important. Wrong oven temperatures can cause dry-textured cakes or a separated soufflé. High-temperature deep-fat frying can give burned, indigestible products.

Salad materials must be so handled that they are kept well chilled at all times. No lettuce is attractive in a salad unless it is crisp and cold.

Good procedures in food handling are generally just good "common sense" points, but they are important in a "cooking-for-quality" program.

Value of Good Timing

The time factor is extremely important in *cooking-for-quality*. By this I mean, controlled cooking, which will bring the cooking time and the serving time as close together as possible. Properly cooked foods, right from the kettle, the oven, the broiler, or the skillet, are at their peak of perfection. The longer they stand before service, the more they deteriorate in quality.

What is more flavorful than roast stuffed chicken right from the oven? The aroma itself is appetite-provoking. A baked potato, oven-fresh, fluffy, mealy, and piping hot, a piece of broiled fish, right off the broiling tray, a fruit upside down cake, with the oven-heat still in it, vegetables, freshly buttered and bright in color, right out of the cooking kettle—these are qualities in food we, as dietitians, must strive to capture in our institutional kitchens.

Controlled cooking and well planned time schedules for baking are essential in the service of quality food. No matter how good your raw materials may be, or your recipes, unless you consider the value of timing in your production plans, quality will suffer. Food cooked hours ahead of the meal period and held in the bain marie cannot be at the peak of perfection when served.

Don't sacrifice food quality for convenient cooks' schedules. Work schedules should be set with an eye to *cooking-for-quality* and serving food at its best:

(a) Have the fish broiled almost to order.

(b) Make the buttered toast to order, right on the floors.

(c) Time the cake to come from the ovens just in time for the meal.

(d) Cook the vegetables just before serving time, and several times during service, if necessary.

(e) Serve hot food *hot* . . . and cold food *cold*.

Coordinate your departments, so that every person works in the interest of serving *quality* food. No sacrifice should be too great if product improvement can result.

Training Program in Quality Food Service

Producing quality food is a detailed job, and wherever detailed operations exist there must be instructions and continuous training.

A good cook is a well trained cook—one with a right attitude toward her job and her associates, a dedicated worker who has pride in the food she produces. Such a cook doesn't grow like Topsy, she is made by good management. Only through a well planned employee training program can this be accomplished.

A training program is time consuming, but most rewarding in accomplishments. You, the teacher, must make your own lesson plans to meet specific needs, and then you must follow through with the teaching program, giving it your personal attention regularly. A good training program should integrate the *group method* of teaching with *on-the-job instruction methods*. Skills are taught to the individual worker at the job level, while general departmental information, attitudes, and loyalty are taught by the *group method*.

Keep in mind that training starts with *top management*. You cannot expect cooks to produce quality food unless you, the dietitian, set the standards and train workers to cook for quality.

Training is important in a quality control program. Only through the hands of trained cooks can you expect regularly to serve quality food, and only through your own efforts can you expect to have trained cooks.

Food Tasting

An important point in any *cooking-for-quality* program is a system of food tasting. Tasting is the final check; it is the only way to judge the results of your efforts. If you, the dietitian, do not taste the

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No cooking or special preparation required. Gerber Strained Foods are ready to heat and serve "as is" or mix with other foods.

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Suitable for most therapeutic diets. Moderately seasoned – smoothly pureed consistency. All Gerber Strained Foods and Cereals have a low crude-fiber content – meats also have a low fat content.

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food, how can you teach cooks ways to improve it? How can you be sure the food your patients are served is top quality, if you do not taste? You cannot escape the duty of taste-testing your food and fulfill your responsibility as a dietitian.

Taste food to judge it—is it seasoned so that the full, natural flavors are there? Is it cooked to just the right degree of doneness? Is the texture just right? Is it a nice consistency for full eating enjoyment? Check during cooking time, so that mistakes can be caught and corrections made before serving time.

I cannot emphasize too much the importance of tasting food before the meal period. It is your best way of judging the efforts of your department in the products they serve. It is your way of showing interest in the work of your cooks and of developing their pride in the department. On occasions you might invite members of the administrative staff, or the medical staff, to taste with you. This stimulates interest in your department, and it can be a wonderful way for you to obtain constructive criticism.

Exacting Supervision

No standards are ever maintained at high levels without careful and exacting supervision. Supervision is the method by which you keep your cooks alert to the details in food production that mean quality results. The best cooks are apt to overlook key points in cooking for quality, if they are not reminded occasionally of their importance. A good supervisor and dietitian will check with her cooks every meal, will judge food and taste products with her, and in so doing will regularly teach the techniques in cooking for quality.

Exacting supervision is a key point in *cooking-for-quality*. All other points are important, but without strong leadership and exacting supervision, they would be ineffectual. It is the responsibility of the dietitian to teach by example—example in work standards, example in high food standards.

Summary

It is the responsibility of the dietitian to see that:

(a) Good raw products are on hand at just the right time.

(b) A complete standard recipe file is provided and used by all cooks.

(c) Careful procedures for handling foods are followed.

(d) The value of good timing is recognized in cooking and serving for quality.

(e) A training program is established to develop good cooks.

(f) A taste-test program for food quality control is carried on for every meal.

Cook for quality—that is a challenge, but such a rewarding one. Every woman responds to the compliments of her family or her friends when they exclaim over the deliciousness of her food. Every dietitian should have the same concern and earn the same praise from those who eat her food. *Eat for health*—this is important, and when well prepared food is eaten with enjoyment, it is bound to be health-giving.

As dietitians, we have accepted this challenge to *cook for quality*. It is our duty, we are specialists in our food field. Nothing is more important in our job than the responsibility of serving good quality, delicious-tasting food, because from this, a contribution is made to *good health*. It is our duty to *cook for quality*, so that our patients and customers will *eat for health*.

Merchandising Quality Food[1]

EVELYN S. DRAKE

Food Director,
Kellogg Center,
Michigan State University,
East Lansing

IT IS THE personal outlook of our business that I would like to discuss. In this age of automation with rising food and labor costs, we cannot afford to be so concerned with our production and business problems that we overlook our major object, which is pleasing the customer.

One of the most difficult problems that faces us is serving captive groups. Because they are captive customers, unless we create an atmosphere of good public relations and *want* to please them as individuals, there is always the feeling that the food isn't good because you already have their business and are able to "get by with anything."

Creating customer good will with captive guests is essential or all your efforts in producing good food may be wasted. For instance, in a hospital, from the minute the guest enters the admitting office until he is discharged, he must be made to feel welcome. The admitting office asks him when his birthday is. This information should be forwarded to the food service department if the birthday may occur while he is hospitalized. If a selective menu is used, this might be shown and explained to him at the time he is admitted.

We are told that the greatest need of all of us is the need to be identified and appreciated as an individual. We are taught that the surest way to get

[1] Presented at the 40th Annual Meeting of The American Dietetic Association in Miami, on October 23, 1957.

its high corn oil content will not elevate blood cholesterol levels

In Emdee Margarine, 80% of the fat content consists of nonhydrogenated corn oil which has been specially processed to preserve its original content of unsaturated fatty acids. Each 100 Gm. provides 34 Gm. of linoleic acid and 18 Gm. of other unsaturated fatty acids.

Daily use of Emdee Margarine instead of customary table spreads and cooking fats puts a safety factor in the diet... assures patient acceptance... provides a liberal intake of the *unsaturated* fatty acids believed essential in metabolism and important in control of blood cholesterol levels. *Trademark

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cooperation, to achieve that which we are now calling "togetherness," is to let it be known that we sincerely need, appreciate, and respect those from whom we are trying to obtain a desired response. To receive, we must give.

The Selective Menu

A selective menu offering a few small choices creates the same impression as the words "as you like" spoken when we are gracefully giving in to someone else's desires. All appetites are not the same size. Your selective menu can tell you this. By allowing the guest to select both what he is to eat and the portion size should permit you a greater latitude in foods served, because much waste can be eliminated.

One selective menu that has proved very successful is divided into three parts—one for breakfast, lunch, and dinner. It follows this pattern:

For breakfast:
- Fruit—orange juice, dried cooked fruit, or vegetable juice
- Eggs—cooked in a different manner each consecutive day
- Bacon or sausage
- Sweet roll or toast

For lunch:
- Soup or fruit juice
- Two entrées
- Two salads—one vegetable, one fruit
- Choice of bread
- Dessert—custard, fresh fruit, cooked fruit, or sherbet

For dinner:
- Two entrées
- Two potatoes
- Two vegetables
- Two salads
- Choice of roll or bread
- Dessert—ice cream, gelatin, or sherbet

Beverages:
- For each meal, all beverages and their accompaniments are listed: coffee, tea, milk, Sanka, buttermilk, cream, and lemon

There is also a space on the menu form to indicate the preference for "small," "medium," or "large" portions.

Seek Customers' Reactions

Ask for comments on how the food and service might be improved. Have some personable employee from your department visit with your guests and invite suggestions and comments. Make your visits at different times. One day be present when the trays are to be delivered so that you can see how and in what condition they are presented to your guests. Another day, be there when trays are removed to learn what is left and find out why. Have you ever checked the breakfast trays for the number of eggs that are returned untouched? Watch what returns on all trays every day. Such checking will give you an answer to what the likes and dislikes of your guests are and whether the portions are the right size.

Attractive Foods

Add ingenuity, surprise, and drama wherever you can—to each meal every day. This means careful consideration of the over-all tray, and particularly in the presentation of the foods. It involves selecting dishes that are attractive and aid in the retention of the heat of the food served in them. Some items come to mind that are high in food value and which can be relished by almost anyone. These include:

(a) Good soups—carefully made from a stock base or cream soups. Serve soup in an earthenware mug for easy handling. It should arrive piping hot. Serve different accompaniments with it, such as delicate, melba toast with tomato consommé or toasted rolls or warm French bread with a cream of potato or leek soup.

(b) Casseroles. Food baked and served in a casserole is attractive, it retains the heat, and it is easy for the guest to handle. Some inexpensive, but good casserole dishes are: escalloped ham and potatoes baked to a succulent and golden brown; creamy macaroni and cheese by itself or with a generous topping of ground beef; beef cubes in a rich brown gravy over egg noodles; well seasoned veal over fluffy rice; and a fluffy steamed dumpling to top chicken in good chicken gravy.

(c) Fruits and vegetables. Let the fruit or the vegetable used in your salads speak for itself. Don't mask it. Serve your dressing on the side, or serve a wedge of lime or lemon with your fruit salad. Make the most of fresh fruits and vegetables in season.

(d) Desserts. Many simple desserts can be given glamor by the dish in which they are served or the garnish which is added. There is much fresh fruit available. Frozen fruits and chilled canned fruits served with a freshly baked cookie may provide a fitting end for a good meal.

Special Events

Pay particular attention to special events and birthdays. Birthday cards with an appropriate verse for the month or a picture of the flower of the month could be placed on the breakfast tray. This could be followed by a cup cake with a candle on the dinner tray. These are small gestures but they say to your guest, "Someone is interested in *you*."

Take advantage of the holidays to use special holiday foods and some little memento or greeting

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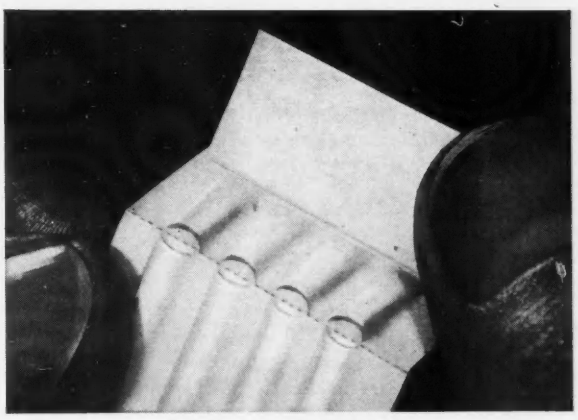

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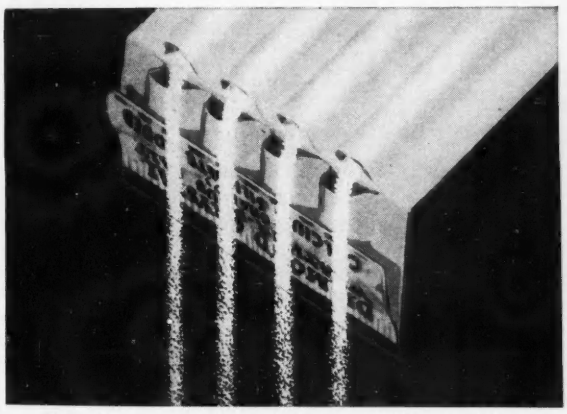

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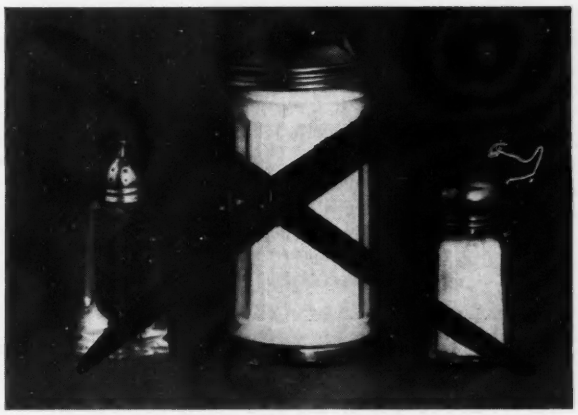

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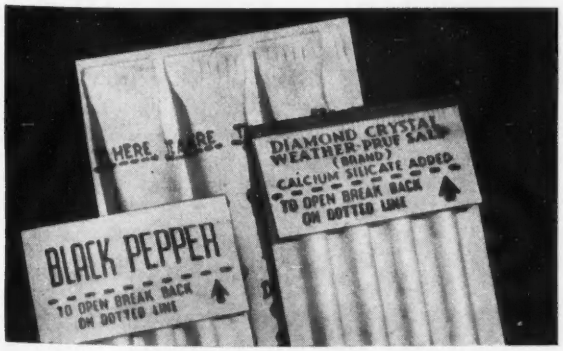

5. Diamond Crystal packets supply your three basic seasonings—pure ground black pepper, sparkling Diamond Crystal Salt, and refined sugar.

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Sirs: Please send me a free sample box of your new seasoning packets.

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on the tray. One of the highest tributes ever paid a hospital food service was by a middle-aged lady who had lost her parents. At Christmas, she was ill and in the hospital. During visiting hours, I called on this lady. I was feeling very sorry for anyone who had to spend Christmas in the hospital. Her opening greeting to me was, "This has been one of the nicest Christmases I have ever spent." The nurses awakened the guests that morning by singing Christmas carols. Each tray served that day had been a veritable picture of holiday foods.

Can the Patient's Menu Selection Be Forecast?

If so, it would be preferable for the patient to have a choice on the day the food is served.

ELMA FRASER

Chief Dietitian,
Memorial Center for Cancer and Allied Diseases
New York, New York

THE MODERN department of dietetics has kept abreast with the trend toward treating each patient as an individual by offering patients a selective menu. Usually these menus have been given to the patient a day in advance to allow for ordering and preparation. However, by the time the next day comes and the food has arrived, the patient may prefer soup and no steak. How nice it would be if it were possible to give the patient a choice on the day the food is served!

This is possible in restaurants, where the manager seldom knows in advance the exact number of customers who will appear that day. Such estimations are made on the basis of past experience, menu combinations, and the weather.

Such a system has not been tried in a hospital to our knowledge. We therefore decided to experiment with the use of the "forecast procedure" for patient service. We wanted to learn if the customer-estimate system could be applied to forecasting the number of patients who would select a particular menu item. If such a system could be applied to hospitals, we felt the patient could be given a chance to select his food on the day it is served. On the other hand, if this system cannot be applied, why is it not suitable?

Experimental Procedure

We first worked out a six-week rotating menu. The next step was to keep a record of the number of servings of each selection which was sent to each floor pantry, based on patients' selection. From this record (Table 1), we hoped to find a correlation between the percentage of patients who chose one item with the number who chose a second item. If these percentages proved to be related when the same menu selections reappeared on the rotating menu during the second six-week cycle, we could then forecast fairly accurately the amount of each item to send to each floor.

Results

Data on thirty-seven menu choices were collected *for all floors* (Table 1). Twenty-four of these, when run on the menu the second time, were chosen in the same ratio as the first time, within 5 per cent. Four were selected in *exactly* the same ratio. These were: corned beef *or* Italian spaghetti; broiled steak *or* pineapple fritters and bacon; roast duck *or* glazed ham balls; and filet of sole *or* Swiss steak.

Of the thirteen remaining combinations which did not show a consistency within 5 per cent of the second run, the percentage of difference in selection varied from 6 to 16 per cent. The combinations which showed the least consistency were: ham steak *or* barbecued meat balls and breaded veal cutlet *or* chicken pot pie.

Thus, in 65 per cent of the choices made by patients from a given menu selection, there *was* a close relationship between the *total* number of patients selecting a given entrée.

The same thirty-seven menu combinations were then studied to determine if there was a corresponding relationship on a *given* floor (Table 1).

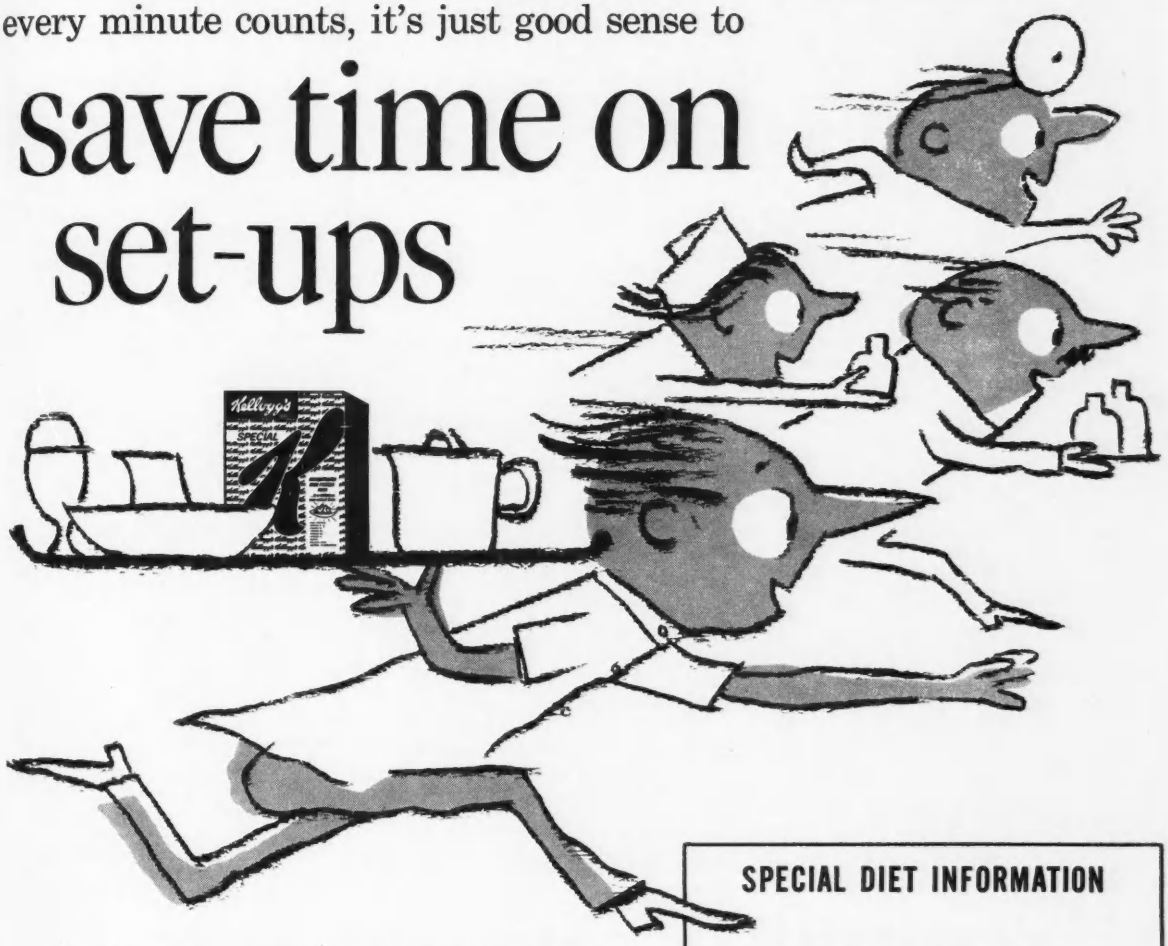
Only thirteen of the menu combinations were chosen by patients on Floor X in the same ratio (within 5 per cent) the second time. Three were selected in *exactly* the same ratio; hot roast beef sandwich *or* baked macaroni and cheese; seafood Newburg *or* Canadian bacon; and ham steak *or* barbecued meat balls. There was no similarity between these menu selections chosen in exactly the same ratio on Floor X and those which appeared in the same ratio when total menu counts were considered (see Table 1).

Of the twenty-four remaining combinations which did not show a consistency within 5 per cent on the second run, the percentage of difference in selection on Floor X varied from 6 to 26. The combinations showing the least consistency were: pot roast *or* chicken noodle casserole and roast loin of pork *or* beef and vegetable stew. One of the menu combinations which showed the least consistency in considering *total* food selections (ham steak *or* barbecued meat balls) was one which showed the

The American Hospital Association reports that the average hospital has 101 full-time personnel for every 100 patients. And this means that in above-average hospitals the personnel-to-patients ratio is even higher!

With more staff members as well as patients to serve, hospital kitchens are busier than ever...so at breakfast, when every minute counts, it's just good sense to

save time on set-ups



And you can, you know, with Kellogg's individuals. They save time in the kitchen, and they're the cereals most patients like best. Dietitians tell us that doctors and other staff members like Kellogg's cereals, too. They provide significant whole grain food values. And remember, there's a Kellogg's cereal that's just right for every special diet.

SPECIAL DIET INFORMATION

Low Sodium—Shredded Wheat, Sugar Smacks; **Wheat Free**—Corn Flakes, Rice Krispies; **High Residue**—All-Bran, 40% Bran Flakes, Raisin Bran; **High Protein**—Special K.

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TABLE 1 Number and percentage of menu items chosen on an individual floor and in the entire hospital during first and second test periods

CHOICES	FIRST PERIOD				SECOND PERIOD				RELATION OF FIRST TO SECOND TEST					
	Number of servings		Per cent making selection		Number of servings		Per cent making selection		Same ratio		Varied within 5 per cent		Varied over 5 per cent	
	All floors	One floor	All floors	One floor	All floors	One floor	All floors	One floor	All floors	One floor	All floors	One floor	All floors	One floor
Filet of sole *or*	85	18	57	53	100	15	57	43	x					x
Swiss steak	65	16	43	47	74	9	43	37						
Corned beef *or*	77	12	39	46	69	15	39	43	x			x		
Italian spaghetti	118	14	61	54	106	20	61	57						
Roast duck *or*	122	21	67	72	120	22	67	73	x			x		
Glazed ham balls	60	8	33	28	58	8	33	27						
Broiled steak *or*	178	23	84	82	115	15	84	65						
Pineapple fritters with bacon	33	5	16	18	22	8	16	35	x					x
Roast loin of pork *or*	88	15	60	71	65	6	61	46						
Beef and vegetable stew	58	6	40	19	42	7	39	54			x			x
Yankee pot roast *or*	187	24	77	75	120	12	75	71			x	x		
Cheese and noodle loaf	55	8	23	25	39	5	25	29						
Broiled lamb chop *or*	150	11	71	48	109	26	66	65			x			x
Chicken pot pie	62	12	29	52	57	14	34	35						
Corned beef *or*	53	9	61	69	59	8	58	62						
Grilled tomato with cheese and bacon on toast	34	4	39	31	42	5	42	38			x			x
Potted veal chop *or*	155	23	72	72	106	12	69	60			x			x
Meat loaf	59	9	28	28	47	8	31	40						
Flanked steak *or*	125	15	72	65	99	14	68	58			x			x
Baked stuffed mackerel	68	8	28	35	47	10	32	42						
Roast lamb *or*	124	14	74	64	123	18	72	69			x	x		
Beef Creole	44	8	26	36	47	8	28	31						
Roast lamb *or*	146	24	86	93	128	17	85	81						
Pork and sweet potato pie	23	2	14	7	22	4	15	19			x			x
Sauerbraten *or*	75	16	69	76	82	13	66	59						
Sweetbread and mushroom casserole	34	5	31	24	43	9	34	41			x			x
Sautéed liver and onions *or*	149	16	75	76	107	12	70	63			x			x
Lamb pie	50	5	25	24	46	7	30	37						
Sliced steak on toast *or*	189	22	85	88	139	21	86	81			x			x
Sweet and sour pork	33	3	15	12	22	5	14	19						
Veal Parmesan *or*	76	13	59	68	69	12	58	75						
Escalloped ham and potatoes	53	6	41	32	50	4	42	25			x			x
Roast beef *or*	203	31	85	76	137	18	84	72			x	x		
Ham croquette	35	10	15	24	26	7	16	28						
Broiled flank steak *or*	161	24	75	80	111	12	71	67						
Escalloped tomato and cheese	54	6	25	20	45	6	29	33			x			x
Sliced turkey supreme *or*	183	27	82	84	131	20	80	74			x			x
Ham and beef loaf	40	5	18	16	35	7	20	26						
Broiled lamb chop *or*	128	18	80	86	132	13	85	68			x			x
Beef hash	32	3	20	14	24	6	15	32						
Boiled beef *or*	205	39	77	80	94	9	72	64						
Welsh rarebit with bacon	62	10	23	20	37	5	28	36			x			x
Yankee pot roast *or*	108	21	75	80	105	13	77	76			x	x		
Lasagne	36	5	25	20	32	4	23	24						
Roast beef *or*	185	27	84	90	144	20	86	71						
Ham and cornbread shortcake	35	3	16	10	23	8	14	29			x			x
Filet of flounder *or*	160	24	80	77	127	22	79	82			x	x		
Baked veal birds	41	7	20	23	34	5	21	18						
Hot roast beef sandwich *or*	129	28	65	65	85	13	52	65						
Baked macaroni and cheese	68	15	35	35	78	7	48	35		x			x	
Flank steak *or*	92	16	80	84	90	12	72	86				x	x	
Cabbage rolls	23	3	20	16	35	2	28	14						
Roast fresh ham *or*	81	9	64	56	114	14	70	61						
Baked stuffed beef birds	45	7	36	44	48	9	30	39				x	x	
Roast duck *or*	119	12	80	43	126	21	72	72					x	x
Veal fricassee	30	7	20	37	50	8	28	28						
Spanish liver *or*	136	13	82	77	92	10	75	63					x	x
Glazed ham balls	29	4	18	23	31	6	25	37						
Seafood Newburg *or*	71	18	46	74	94	25	54	74		x			x	
Canadian bacon	82	10	54	26	79	9	46	26						
Pot roast of beef *or*	175	29	75	78	108	11	62	52						
Chicken noodle casserole	57	8	25	22	66	10	38	48					x	x
Salisbury steak *or*	88	8	70	62	115	13	77	68						
Cheese and rice omelet	38	5	30	38	34	6	23	32					x	x
Ham steak *or*	59	5	66	62	101	14	80	70					x	x
Ravioli	31	3	34	38	25	6	20	30						
Roast fresh ham *or*	106	15	71	68	112	14	81	74					x	x
Stuffed peppers	43	7	29	32	27	5	19	26						
Breaded veal cutlet *or*	104	14	46	64	84	10	62	67				x	x	
Chicken pot pie	120	8	54	36	51	5	38	33						
Ham steak *or*	110	13	61	68	117	15	77	68		x			x	
Barbecued meat balls	70	6	39	32	35	7	23	32						
Chicken fricassee *or*	122	15	78	83	117	19	85	70					x	x
Shepherds' pie	34	3	22	17	20	8	15	30						

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greatest consistency when selections on individual floor were studied.

These results indicate that on one particular floor, only 35 per cent of the choices made by patients were similar to those made the first time the selection was offered.

Discussion and Conclusions

There was a close relationship between the *total* amounts of the two menu selections on a given day, since 65 per cent of the patients made the same selections the second time a choice was offered. However, in comparing the selections made by the patients on individual floors, there was no correlation for 65 per cent of the patients.

If additional studies were conducted with other choices, this estimate system could be used to forecast the number of patients who will select a given menu item in hospitals with centralized service, since total figures for the number of patients and not individual floor counts are used.

This estimate system could not be used successfully to forecast the number of patients who will select a given item when decentralized service is in operation. Our study showed no correlation for 65 per cent of the patients making menu selections when individual floor counts were analyzed.

Why was there no correlation between individual floor results and *total* menu selection? We assume the following factors to have been influential:

(a) The number of patients on an individual floor is not over forty. Therefore, if two or three patients vary in their menu selection, it affects the percentage much more than when more patients are under consideration percentagewise.

(b) The number of patients placed on modified diets by their physicians will vary, and this variation will change the number of patients making given menu selections from the regular menu on a specific floor.

(c) The number of patients who are too ill to feel like eating will vary, depending on treatments, operations, and so on.

Suggestions for Further Study

This study was limited in these ways: Memorial Center is a specialized hospital and many of our patients are extremely ill. The study was conducted over a twelve-week period in mid-winter; therefore, only two samplings were made, and none for summer menus.

It is suggested that additional studies be made, perhaps carrying the menu selections throughout an entire year. Further experiments might also be conducted in a hospital using centralized service to determine if our conclusions hold true in that situation.

It would also be interesting to compare these results with those of a study done in a general or maternity hospital, for example.

Effect of Exercise on Appetite

Medical writers often discount the value of exercise in treating obesity because it is felt that the extra physical activity will promote appetite, and the energy value of the extra food consumed will be the same as, or even more than that of the exercise. There is no doubt that in physically active persons appetite balances, with remarkable precision, the energy value of the food eaten and the work performed. But this may not be so in sedentary people.

Passmore carried out an experiment on an obese dog in which periods of confinement to its kennel were alternated with a period of light exercise and one of hard exercise. The average daily food consumption was 378 gm. during the first sedentary period, 331 gm. during the period of light exercise, 396 gm. during the secondary sedentary period, and 391 gm. during the period of hard exercise. Over the whole period, the weight fell from 25 to 22.6 kg.

In this animal, a short period of exercise did not increase the appetite above the sedentary level. This result supports the belief that a certain minimal level of physical activity is necessary for the appetite to function with precision and to adjust food intake to requirements.

If this hypothesis can be substantiated in man, it has great practical importance in the treatment of obesity. Passmore feels that it is not generally realized how sedentary the life led by most urban people is. Even military cadets and coal miners, who follow two of the most physically active occupations, spend about three-fourths of their working day lying, sitting, or standing. The daily physical activity of many thousands of light workers, including homemakers, may be below the threshold needed for appetite to function normally. For this reason, they may overeat and become obese. If this is true, the first duty of their physicians is to prescribe a suitable regimen of physical activities.—*Abstracted from Passmore, R.: A note on the relation of appetite to exercise, Lancet 1:29 (Jan. 4), 1958, by Clara Karl, University of Chicago Clinics.*

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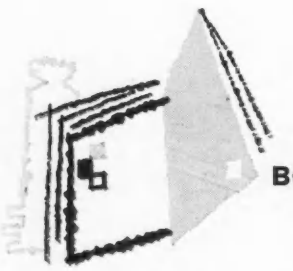

BOOK REVIEWS

The Freezing Preservation of Foods. Volume II. Cooked and Prepared Foods. Third completely revised and augmented edition. By Donald K. Tressler, Ph.D., and Clifford F. Evers. Westport, Connecticut: The Avi Publishing Company, Inc., 1957. Cloth. Pp. 559. Price $10.

Volume II of this extensive treatment of the subject, *Freezing Preservation of Foods*, includes a comprehensive coverage of precooked and prepared foods preserved by freezing. First there is a short survey of the development of prepared and precooked frozen foods and a listing of some 175 such foods found on the market, and this list does not include a fine breakdown of the items. For example "cookies" are mentioned with no reference to type or flavor and cakes are not even listed. In the next section, "Special Problems" encountered in the over-all handling of such foods are considered. The authors make it clear that these are problems pertaining especially to prepared and precooked foods. For information on frozen foods in general, the reader is referred to Volume I. Following a discussion of packaging of precooked foods, the authors consider literally everything from "soup to nuts" including "Chinese, Kosher, Mexican and Other Foreign Foods" and finally the complete meal. Consideration is given to the storage, handling, and use of frozen prepared foods both in the home and in public feeding establishments.

As in Volume I, information included is well documented. The number of references cited is extensive and varies in number from six for "Infant Foods" to sixty articles referring to "Special Problems" and seventy-five dealing with "Precooked Poultry, Poultry Dishes and Pot Pies."

In the appendix are thirty-five pages giving "United States Standards" and "Military and Federal Specifications" for prepared frozen foods and for ingredients used in these foods. This serves as an excellent reference for those concerned with standards for grades for frozen precooked and prepared foods.

Volume II, like Volume I, contains a wealth of material and should be available to all concerned with the problems of producing and/or utilizing frozen foods. —*Gladys E. Vail, Ph.D., Head, Department of Foods and Nutrition, Purdue University, Lafayette, Indiana.*

Food Preparation—With Illustrations and Discussions of Success or Failure. By Martha E. Dresslar and Mary Skattebol. Seattle: University of Washington Press, 1957. Paper, spiral bound. Pp. 82. Price $3.

According to the authors, this book is based on posters used for open-house displays to interest high school students in food preparation. In the preface, they state that the subject matter is limited in scope and does not include all subjects.

The book consists of a series of photographs made from these posters, as well as others showing the results of comparative cookery methods with a brief explanation for the success or failure. A scientific explanation is given for each illustration. The information for these explanations was compiled from eight college texts on food preparation and two current research articles, which are listed in the bibliography.

This handbook could be used to supplement text books on food preparation and should be of value as illustrative material for lectures and demonstrations. The subject matter outlines are clear and concise and could serve as an aid in summarizing factual material.

The statements on each of the thirty-three illustrations are brief and to the point. The accompanying subject-matter information clarifies some points that otherwise could be confusing and misunderstood.—*Pearl Janssen, Associate Professor of Home Economics, University of Illinois, Urbana.*

The Home Book of Spanish Cookery. By Marina Pereyra de Aznar and Nina Froud; New York: M. Barrows and Co., 1957. Cloth. Pp 248. Price $3.75.

"Paella a la Valenciana," as outlined in this book, bears little resemblance to that infamous American dish, Spanish rice. Yet it is the most typical of Spanish cooking. The authors say, "Spanish cooking is based on natural flavoring and it very seldom makes use of the strong condiments that are so commonly found in Latin American and East Indian dishes. For instance, one of the usual mistakes made about Spanish rice is to imagine that it is prepared with curry, as Indian rice is. It is dreadful to think how many American cooks have for years been living under the impression that Spanish rice burns your entrails to cinder!"

"Gazpacho," the flavorful cold soup-salad, is given in three versions and could be a fine addition to summer menus. The section on "Fritos" is full of new ideas for American cooks, particularly "Surprise potatoes."

"Flan," the baked custard, and "natilla," the "boiled" custard, are described in many variations. Some of these seemed to me to be new possibilities for soft and bland diets. "Fried milk" and "fried cream" are unusal desserts which should be popular.

The most useful sections in this book are those on fish dishes and on meats. Here are the "bacalaos," all the popular cod dishes, lobster, hake, sole, flounder, snails, tuna, and salmon. There are a few recipes for meat cooked in roasts, but more numerous are the pates, casseroles, and stews.

Measurements are given in ounces, in spoons, and in cups, but they are given. Oven temperatures are indicated as low, moderate, or hot. Still, any but the newest cooks would be able to read, and use, the recipes. *The Home Book of Spanish Cookery* should be challenging and entertaining to many readers.—*Virginia Monahan Bayles, Houston.*

RECENT BOOKS RECEIVED

How to Increase Profits with Portion Control. By Douglas Carlyle Keister. New York: Ahrens Publishing Co., Inc., 1957. Paper, spiral bound. Pp. 51. Price $2.50.

Introduction to Protein Chemistry. By Sidney W. Fox and Joseph F. Foster. New York: John Wiley & Sons, Inc., 1957. Cloth. Pp. 459. Price $9.50.

The Art of Caribbean Cookery. By Carmen Aboy Valldejuli. Garden City, New York: Doubleday & Company, Incorporated, 1957. Cloth. Pp. 254. Price $3.95.

Aids to Materia Medica and Therapeutics. Fifth edition. By J. W. Hadgraft. London: Bailliere, Tindall and Cox, 1957; U.S. distributor, Williams & Wilkins Co., Baltimore. Cloth. Pp. 259. Price $3.25.

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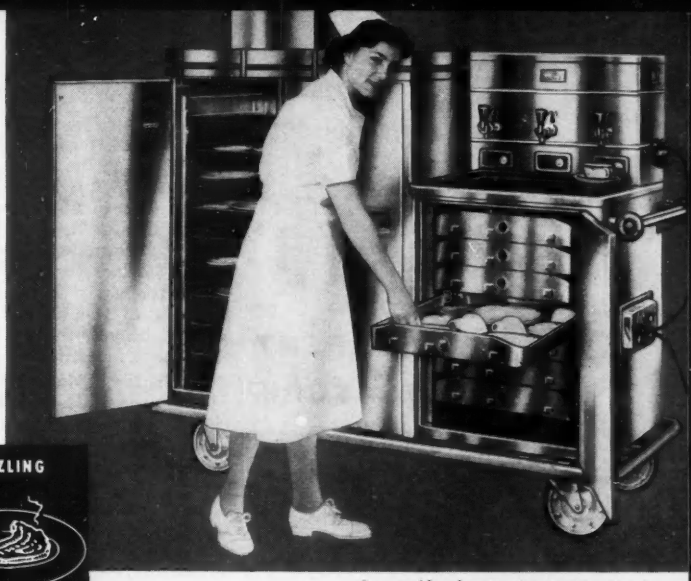

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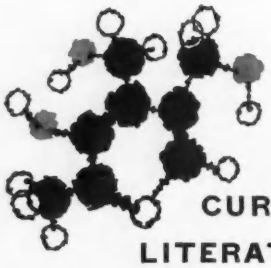

CURRENT LITERATURE

Contributed by Janette C. Carlsen, The Johns Hopkins Hospital, Baltimore; Clara Karl, University of Chicago Clinics; Elizabeth Tuft, Chicago Wesley Memorial Hospital; Ruth Marie Valentine, Dietetic Intern, VA Center, Los Angeles; and the Journal staff.

AMERICAN JOURNAL OF SURGERY

Vol. 95, March, 1958

*Effect of vitamin A, niacin and riboflavin on vascular lesions. A preliminary report. M. E. Eisen.—p. 438.

Vitamins and Vascular Lesions. A new potent combination of vitamin A, niacin, and riboflavin has been applied intensively for one to ten years in thirteen cases of arteriosclerotic peripheral vascular disease, two cases of arteriosclerotic heart disease, and in two cases of thromboangiitis obliterans. All were on normal diets. Sixteen of the patients were heavy smokers and one was a non-smoker. This study includes repeated determinations of blood clotting, sedimentation, red cell counts, hemoglobin, blood cholesterol, and X-ray. The formula included 50,000 I.U. of vitamin A palmitate, 50 mg. niacin, and 5 mg. riboflavin. Subjective signs were relief of leg cramps and of substernal distress with increased walking capacity. This improvement was noted after three to six months of therapy and occurred whether patients smoked or not. Withdrawal brought a prompt return of the initial syndrome.

ANNALS OF BIOCHEMISTRY AND EXPERIMENTAL MEDICINE (India)

Vol. 17, No. 5, 1957

*Investigations on the medicinal properties of banana. I. The chemical composition and nutritive value of banana. V. Subrahmanyan, B. S. Lulla, M. Narayana Rao, D. S. Johar, and M. Swaminathan.—p. 155.

*Nutritive value of high acidity ghee. S. Tawde and N. G. Magar.—p. 177.

Medicinal Properties of Banana. Banana therapy is practiced in hospitals in India largely to combat diarrheal conditions in patients, the prescription for diet generally consisting of buttermilk or tea and well ripened banana. There is a strong belief among people in South India that the medicinal value of banana is possessed by a limited number of varieties. This present paper, which is the first in a series, presents results of the chemical analysis of Poovan variety of banana (generally recommended for medicinal use) and the utilization of the same in young growing rats when fed with different diets. Inclusion of this banana powder in synthetic or rice diets resulted in a lower absorption of nitrogen and a threefold increase in the fecal weight. It is too early to conclude the role, if any, of the undetermined portion of banana pulp in combating diarrheal and other intestinal disorders.

Nutritive Value of Ghee. Due to different methods of manufacture, collection, and storage, ghee containing considerable amounts of free fatty acids comes into the market. In India, butter is mostly prepared on a small scale and accumulated for various lengths of time before converting it into ghee. Acidity is possibly produced during this storage. In this study rats were fed diets containing high- and low-acidity and normal ghee. Not much difference was found in the nutritive value of the high-acidity ghee diet supplemented adequately with vitamins, and the control diet.

ANNALS OF INTERNAL MEDICINE

Vol. 48, January, 1958

The differential diagnosis of intestinal malabsorption with I^{131} fat and fatty acid. B. J. Duffy, Jr., and D. A. Turner.—p. 1.

*Malabsorption syndrome: intestinal absorption of vitamin B_{12}. S. Oxenhorn, S. Estren, L. R. Wasserman, and D. Adlersberg.—p. 30.

A comparison of the plasma iron, iron-binding capacity, sternal marrow iron and other methods in the clinical evaluation of iron stores. E. Beutler, M. J. Robson, and E. Buttenwieser.—p. 60.

*Lessons from serum cholesterol studies in Japan, Hawaii and Los Angeles. A. Keys, N. Kimura, A. Kusukawa, B. Bronte-Stewart, N. Larsen, and M. H. Keys.—p. 83.

Erythropoietin. Editorial. M. S. Sacks.—p. 207.

Vol. 48, February, 1958

*Observations on carotenemia. The Lord Cohen of Birkenhead.—p. 219.

The diabetic coma of acute pancreatitis. G. T. Tully and J. J. Lowenthal.—p. 310.

*An evaluation of dietary protein in the treatment of liver disease. T. C. Chalmers.—p. 320.

*The use of a formula diet for weight reduction of obese out-patients. A. R. Feinstein, V. P. Dole, and I. L. Schwartz.—p. 330.

Malabsorption Syndrome. The common denominator of the clinical entities, nontropical sprue, tropical sprue, celiac disease, and idiopathic steatorrhea, is impaired intestinal absorption of various dietary substances. The etiology of these syndromes is not known, but evidence for a hereditary predisposition as well as environmental factors has been documented. These entities may be grouped together under the term "malabsorption syndrome." Intestinal absorption of vitamin B_{12} in patients with this syndrome was measured by excretion of radioactivity following the oral ingestion of a physiologic dose of cobalt labeled vitamin B_{12}. Absorption of this vitamin was impaired in a significant number of cases but was not related to or improved by intrinsic factor.

Serum Cholesterol in Japan, Hawaii, and Los Angeles. Studies on the diet, serum cholesterol, and frequency of atherosclerosis and coronary heart disease are reported for Japanese in Japan, where coronary heart disease is rare; in Hawaii, where it is fairly common; and in California, where the local Japanese are similar to local Caucasions in regard to the frequency of the disease. The findings are consistent with the theory that an important factor in the frequency of coronary heart disease incidence in populations is the proportion of calories in the diet provided by fats, particularly the common saturated fats.

Carotenemia. Carotenoids occur in carrots, all green vegetables, butter, eggs, and oranges. The most important of these pigments is beta-carotene, a precursor of vitamin A. Cryptoxanthin, another vitamin A-precursor, is found in many of the same foods. Hypercarotenemia, characterized by yellow pigmentation of the skin, especially the nasolabial folds, palms of hands, and soles of feet, increased in Britain during World War II due to an excessive intake of raw carrots. This metabolic defect was frequently observed in diabetic patients before the introduction of insulin when the diet contained excessive quantities of green vegetables and fats. The association of this condition with myxedema in a significant number of patients emphasizes the importance of thyroid hormone in the metabolism of carotene.

Dietary Protein in Treating Liver Disease. In spite of some conflicting evidence, there is reason to believe that an increased protein intake and abundant calories will more rapidly overcome the depletion of body proteins common in patients with decompensated cirrhosis and may thereby hasten recovery. This dietary treatment is also effective for hepatitis. Protein toxicity, a disorder of the brain and not of the liver, occasionally occurs. This syndrome is reversible if protein is withdrawn for one or two days and then slowly increased by 25-gm. increments until a safe, therapeutic level is obtained.

Formula Diet for Reducing for Out-Patients. One hundred six obese outpatients, averaging 224 lb., were given a 900-calorie diet composed of evaporated milk, dextrose, corn oil, and water, supplemented by a multivitamin capsule. Seven patients followed the diet strictly for over twenty-one weeks, and nine others did so for periods of eleven to twenty weeks. Of those who began treatment, 53 per cent lost more than 20 lb.; 28 per cent lost over 40 lb. One year later, 46 per cent of those who had lost 30 lb. or more, had limited their gains to less than 30 per cent of the original loss.

ARCHIVES OF INTERNAL MEDICINE

Vol. 101, March, 1958

*Some metabolic and nutritional changes asso-

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ciated with injury. H. L. Upjohn and S. M. Levenson.—p. 537.

Metabolic and Nutritional Changes in Injury. The metabolic reaction to injury consists of a variety of chemical and physiologic changes which involve protein, carbohydrate, fat, water, vitamin, endocrine, and electrolyte metabolism in almost every organ of the body. The intensity of the metabolic response usually parallels the severity of the injury, but is most marked in previously healthy, well nourished young adult men. The extent and duration of the involvement of the metabolites vary; sodium disturbances are brief and protein changes are prolonged.

THE BRITISH JOURNAL OF NUTRITION

Vol. 12, No. 1, 1958

*Clinical observations on obese patients during a strict reducing regimen. J. A. Strong, R. Passmore, and F. J. Ritchie.—p. 105.

*The chemical composition of the tissue lost by obese patients on a reducing regimen. R. Passmore, J. A. Strong, and F. J. Ritchie. —p. 113.

A Strict Reducing Regimen. In this paper a system of management suitable for some obese patients is described in which it is shown that it is possible and practical to accelerate weight reduction by combining an active program of physical exercise—up to 4 hr. of walking a day—with a diet restricted to 400 calories a day. Such a regimen can produce a negative energy balance as great as 3000 calories per day. Observations were made on seven patients in a hospital each of whom lost 13 to 16 kg. in six weeks. Persistent moderate ketosis developed in three patients but did not interfere with their sense of well-being or activities. Observations on the patients were consistent with the hypothesis that the sensation of hunger, which is such a constant feature of semi-starvation, fades when the negative caloric balance is high and the patient approaches a fasting condition. It was felt that hunger was not excessive in these patients. There is no adequate physiologic explanation for the virtual absence of hunger and meager appetite. Perhaps the most serious potential disadvantage of in-patient treatment might be a wrong emphasis, in that the responsibility for the treatment may tend to be shifted from the patient to the hospital and its staff. Of these seven patients, each continued to lose weight while under out-patient supervision, but two defaulted after some months.

Tissue Loss in Obesity. The excess weight of obese people is not all attributable to fat. Keys and Brozek introduced the term "obesity tissue" to describe the material laid down in response to an excessive caloric intake. It is described in chemical terms and so distinguished from adipose tissue, which is an anatomical term. In this paper an analysis of the composition of obesity tissue lost by seven patients on a reducing regimen is presented. Over a six-week period fat formed 73 to 83 per cent of the weight lost, protein 4 to 7 per cent, and water 10 to 23 per cent. In the first few days on the regimen, each patient lost large amounts of body water, up to 2 to 4 liters (initial dehydration). Subsequent water losses were small, and all patients gained water for some period (secondary water retention). This retention of water took place at times when fat and protein continued to be lost.

BRITISH MEDICAL JOURNAL

No. 5066, February 8, 1958

*Results of three years' experience with microbiological assay of vitamin B_{12} in serum. G. H. Spray and L. J. Witts.—p. 295.

*Porphyria. A South African screening experiment. G. Dean and H. D. Barnes.—p. 298.

*Difficulties associated with breast-feeding. A study of 106 primiparae. F. E. Hytten, J. C. Yorston, and A. M. Thomson.—p. 310.

No. 5068, February 22, 1958

*Role of insulin in acute hypoglycaemic action of tolbutamide. J. A. Weaver, T. E. Prout, G. W. Scott, and S. P. Asper.—p. 424.

No. 5070, March 8, 1958

*Carbutamide in juvenile diabetes. J. M. Smellie.—p. 553.

Assay of Serum Vitamin B_{12}. The results obtained with microbiologic assay of vitamin B_{12} in the serum of various subjects are presented. The range of values found in 123 normal subjects was from 150 to 500 mcg. per milliliter, with a mean of 450. Of 94 patients with pernicious anemia in relapse, 85 had values of 100 mcg. per milliliter or less, 7 had values of between 100 mcg. and 170, and 2 anomalous normal results were obtained. In subacute, combined degeneration of the spinal cord, the serum vitamin B_{12} is reduced to the same levels as in pernicious anemia, and this has proved useful in differentiating the condition from other diseases of the nervous system. There is a moderate reduction in serum vitamin B_{12} in pernicious anemia of pregnancy, but not usually to the same degree as in Addisonian pernicious anemia. A considerable proportion of patients who develop megaloblastic anemia in association with partial or total gastrectomy, diverticulosis of the small intestine, blind loops left after surgery, the malabsorption syndrome, dietary deficiency and anticonvulsant therapy are deficient in vitamin B_{12}. Abnormally high results were obtained in all the patients with chronic myeloid leukemia, but in chronic lymphatic leukemia, the results were normal. In the acute leukemias and in polycythemia vera both normal and high values were found.

Porphyria. Porphyria has been defined as an "inborn error in metabolism." It is important to distinguish between porphyria and hyperporphyrinism because porphyria treated with commonly used drugs may precipitate an acute disturbance of porphyrin metabolism with possible paralysis and death. Acute porphyria occurs only if porphyria has been inherited. Although the Swedish and South African types are genetically different disorders, the acute attacks are similar. The methods for detecting the South African type during the nonacute or quiescent stage are described. A simple method for screening the stool for excess porphyrin is described. Sufficient stool for the test can usually be obtained on the gloved finger while making a rectal examination. The urine should also be examined for porphobilinogen and excess porphyrin. Two groups of South Africans were screened for porphyria using the methods described. Among the 608 patients at a mental hospital, 4 had porphyria, and among 645 nurses, 11 were thought to have inherited this gene. Screening for porphyria should be routine practice in South Africa where the disorder is often found.

Difficulties in Breast Feeding. An intensive follow-up for three months was made of 106 primparae who breast fed their babies. All but 2 experienced difficulty, and 74 abandoned it within three months. More than one difficulty often occurred simultaneously, and the relative importance of each was usually impossible to assess. The most common complaints were of babies who cried excessively, maternal fatigue, breast and nipple complications, and inadequate lactation. Symptoms suggesting harm to the baby, such as crying, were more likely to result in weaning than difficulties or discomforts affecting the mother only. The most important influence in determining whether breast feeding was abandoned in the face of difficulty was the mother's attitude. Mothers who continued to lactate throughout the three months were more often unwell and worried than those who abandoned breast feeding soon after leaving the hospital, and the breast-fed baby had no obvious advantage. It seems that the breast-feeding mother in modern urban society often must accept a heavy load of discomfort and disability and that this is attributable more to her way of life than to the factor of breast feeding *per se*.

Tolbutamide in Diabetes. Ten patients with diabetes mellitus of recent onset, not controlled by diet or previously treated with insulin, were given a single dose of 3 gm. tolbutamide orally. Eight showed a significant fall in venous glucose concentration. Studies on the difference between the arterial (A) and venous (V) glucose concentrations, expressed as A-V/A, have shown no evidence of an increase in the uptake of glucose by the peripheral tissues in patients given tolbutamide. Studies of insulin-like activity of serum, as assayed by the rat hemi-diaphragm method, have showed that there is no change in the insulin-like activity in the patients' serum before and after tolbutamide administration. The rate of disappearance of intravenously administered insulin ^{131}I from plasma was

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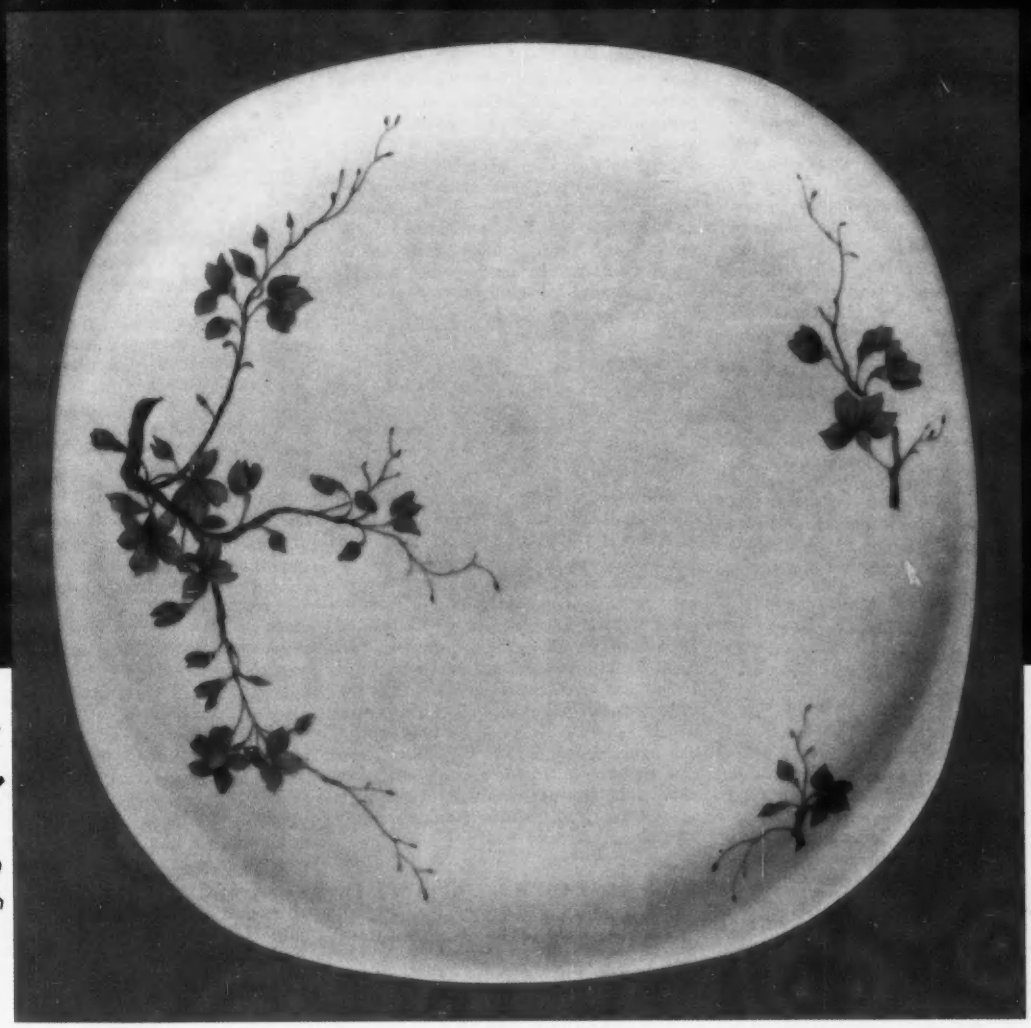

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studied in normal rabbits by the electrophoretic technique. No difference in the rate of disappearance of insulin ^{131}I was found following the injection intravenously of tolbutamide as compared with untreated animals. These studies support the view that the hypoglycemic action of tolbutamide is not produced by increasing the effective level of insulin.

Carbutamide in Juvenile Diabetes. Three children whose diabetes was of recent origin and who had little or no ketosis were studied as in-patients. The hypoglycemic action of carbutamide was demonstrated and in two was associated with a reduction in glycosuria. Such effects were achieved only with relatively high and potentially dangerous blood sulphonamide levels, and evidences of ill-health of a non-specific character, presumably due to sulphonamide intoxication, developed. These studies support the view that carbutamide has no place in the treatment of diabetes in childhood, even though the disease is of very recent origin and uncomplicated by ketosis.

CANADIAN JOURNAL OF PUBLIC HEALTH

Vol. 49, February, 1958

*Antibiotics in foods: A review of some public health aspects. F. S. Thatcher.—p. 58.

Antibiotics in Foods. The only antibiotics likely to satisfy reasonable requirements as preservatives in food in Canada must have the following properties: (a) demonstrated effectiveness under commercial conditions and under environment provided by normal storage methods; (b) stability in the foods for which they are recommended under commercial conditions of storage for periods sufficient to exercise effective bacteriostasis; (c) "broad-spectrum" antibacterial action; (d) non-toxicity within acceptable limits of safety; (e) no common propensity at low levels to induce "one-step" high level resistance among a microbial population; (f) non-carcinogenic within a practicable interpretation of the term; (g) non-allergenic beyond a degree of rare eccentricity. Antibiotics should only be allowed in foods for which social custom involves cooking as a normal practice and in which, for practical purposes, cooking destroys the antibiotics. These regulations are followed carefully in Canada. A problem does exist, however, in the prevalence of antibiotics in milk from antibiotic-treated cows. From this has also arisen a problem in cheese manufacture. Action to combat this problem is urgently needed.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 78, March 15, 1958

*Some clinical aspects of nicotinic acid therapy in hypercholesterolemia. P. O. O'Reilly.—p. 402.

Niacin Therapy and Hypercholesterolemia. A case of psychosis with cerebral arteriosclerosis was studied over a ten-month period. Administration of 3 gm. niacin a day resulted in a marked lowering of serum cholesterol level. Electroencephalogram tracings showed that normalization of the electrical pattern of the brain occurred. From a psychiatric viewpoint, niacin treatment resulted in a remission of the psychotic features of this case. Another patient with essential hypercholesterolemia was given 3 gm. niacin daily for six months. Beneficial effects were noted in increased work tolerance, decrease in carpopedal spasm, and lowering of cholesterol level to normal limits.

DIABETES

Vol. 7, March–April, 1958

*Influence of the World War II food shortage on the incidence of diabetes mellitus in Japan. Y. Goto, Y. Nakayama, and T. Yagi.—p. 133.

Diabetes in Japan. The incidence of diabetes mellitus in out- and in-patients at a clinic of Tohoku University was analyzed for the period 1936 through 1956. During the war years, the number of diabetic patients decreased, reaching a low point during the years 1945 through 1948. This decrease was most striking among persons with type I diabetes who, by definition, have a mild form of the disease not requiring insulin therapy, are often obese, and are usually older. It is concluded that the decreased incidence of diabetes seen in this clinic was due principally to the reduced caloric intake during and after the war years.

FOOD RESEARCH

Vol. 23, March–April, 1958

*The viability of *Escherichia coli* and a spoilage yeast in carbonated beverages. L. D. Witter, J. M. Berry, and J. F. Folinazzo.—p. 133.

*Analysis of the protein constituents of drip from thawed fish muscle. H. L. Seagran.—p. 143.

*Riboflavin, niacin and thiamine in Apalachicola Bay oysters. J. Wentworth and H. Lewis.—p. 194.

*Effects of radiation on hematin compounds. A. L. Tappel.—p. 205.

Microorganisms in Carbonated Beverages. The viability of a spoilage yeast and *Escherichia coli* were measured at several combinations of sucrose concentration, *p*H, and degree of carbonation which encompassed the range found in soft drinks. From these experiments, the basic pattern of action of the three main beverage variables on microbial lethality was estimated. At *p*H 2.0, lethality of *E. coli* was approximately 50 times that at *p*H 3.0, 250 times that at *p*H 4.0, and 90 times that at *p*H 4.5. Above *p*H 2.0, lethality was independent of sucrose concentration, whereas at *p*H 2.0, increased sucrose appeared to exert a slight protective effect. Survival of yeasts was primarily a function of the carbonation. Without carbonation, there was no lethality regardless of the °Brix or *p*H. In carbonation, an increase in *p*H caused a significant decrease in lethality. Lethality of the yeast was independent of the sucrose concentration.

Protein Constituents of Drip. When fish muscle is frozen and subsequently thawed, a cloudy, liquid phase called drip exudes from the muscle. In this study, the protein constituents of drip isolated from thawed fish muscle were determined and compared with the known major protein fractions of fish muscle. A definite similarity between the protein composition of drip and extracts of low ionic strength from fresh fish muscle was noted. In view of the similarity between the number and ionic characteristics of the protein constituents of drip and extracts of low ionic strength of fish muscle, and the absence of the contractile protein, actomyosin, in drip, it is suggested that the sarcoplasmic protein fraction of fish muscle is not intimately associated with the origin of drip.

B-Vitamin in Oysters. This study was done to determine any seasonal variations which might occur in the amounts of riboflavin, niacin, and thiamine in southern oysters. Oysters from Apalachicola Bay, Florida, were assayed monthly for these three vitamins and total solids. During the summer months, when oysters are considered to be of poor quality, there was no obvious change in the levels of niacin, riboflavin, or thiamine. Although there were large differences in amounts of total solids and protein, these constituents showed little relation to the concentrations of the vitamins studied.

Radiation and Hematin Compounds. Knowledge of the radiation chemistry of hematin compounds is important both for an understanding of the changes induced during radiation preservation of meats and for a better understanding of the mechanism of radiation damage to animals, plants, and bacteria. A survey was made of the effects of gamma radiation on a number of hematin compounds, including hemoglobin derivatives, hemiglobin derivatives, denatured globin hemichromes, and cytochrome c. Further evidence was obtained for the anaerobic conversion of methemoglobin to oxyhemoglobin by ionizing radiation. Conditions for the production of the chromophore absorbing at 610 mcg. was sought and the reaction resulting in this absorbance is explained.

FOOD TECHNOLOGY

Vol. 12, January, 1958

*Quantity of sample, swallowing, and rinsing factors in flavor preference testing of tomato juice. L. A. Pettit.—p. 1.

*Informational bias in flavor preference testing. L. A. Pettit.—p. 12.

*A new type of bread. Wheat-and-rice bread. A. M. Suarez.—p. 15.

*Variation in preference ratings for foods served at meals. D. R. Peryam and N. J. Gutman.—p. 30.

*Time-temperature tolerance of frozen foods. XII. Turkey dinners and turkey pies. H. L. Hanson and L. R. Fletcher.—p. 40.

*The influence of test location and accompanying sound in flavor preference testing of tomato juice. L. A. Pettit.—p. 55.

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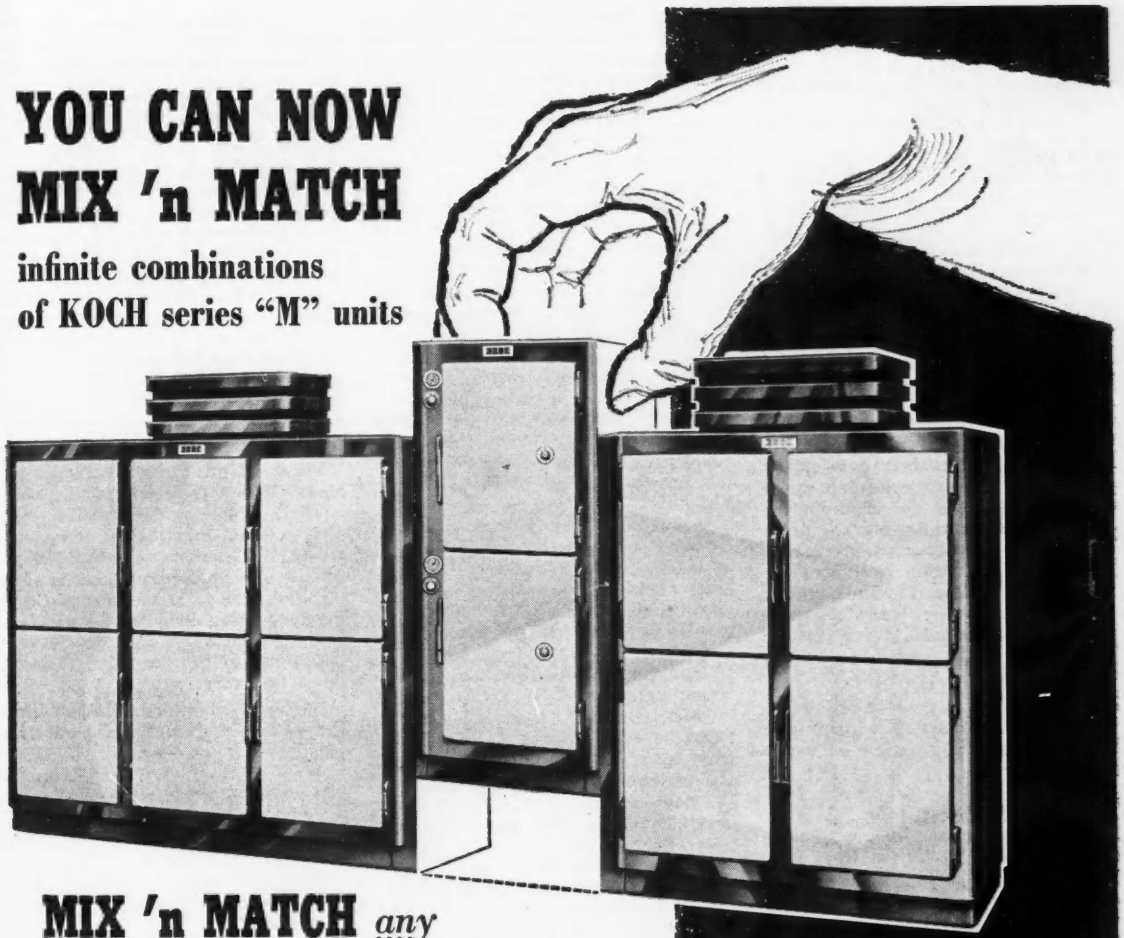

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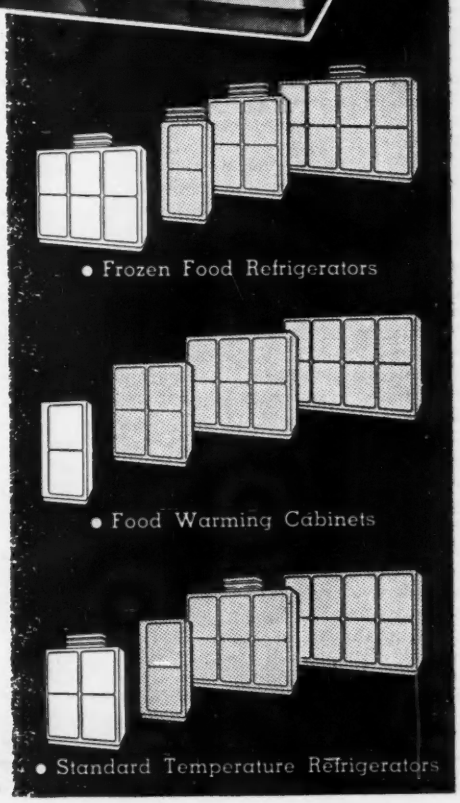

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Vol. 12, February, 1958
*Factors influencing drained weight of canned clingstone peaches. S. Leonard, B. S. Luh, and E. M. Mrak.—p. 80.
*Shrinkage and organoleptic characteristics of beef aged in controlled environments. R. B. Sleeth, G. G. Kelley, and D. E. Brady.—p. 86.
Vol. 12, March, 1958
*Microbiological standards for foods. II. What may microbiological standards mean? F. S. Thatcher.—p. 117.
*Effect of certain bacterial inhibitors on shelf-life of fresh fryers. R. J. McVicker, L. E. Dawson, W. L. Mallmann, S. Walters, and E. Jones.—p. 147.
*Effects of sodium sorbate and ascorbic acid on attempted gamma radiation pasteurization of apple juice. E. A. Asselbergs, W. E. Ferguson, and E. F. MacQueen.—p. 156.

Effect of Sample Size, Swallowing, and Rinsing in Sensory Testing. With respect to the preference for tomato juice by college student panels, (a) rinsing of the mouth with tap water between tastes had no effect on the preference; (b) swallowing the product produced more accurate preference results than not swallowing; and (c) preference was altered by the quantity of sample consumed. When a larger quantity is consumed, truer results were obtained than when a smaller quantity was consumed.

Information Bias in Flavor Preference Testing. From flavor tests, it is indicated that information conveyed to, or possessed by, tasters has the potential of altering preference findings of the flavor panel. This suggests that tasters may taste what they expect to taste.

Wheat-and-Rice Bread. A wheat-and-rice bread is offered as a substitute for common wheat bread. Its organoleptic qualities are equal to other breads. The nutritional requirements for a good bread are met. Use of 30 per cent rice replacing wheat flour was chosen as a result of considering Venezuelan agro-economical and nutritional conditions. Protein efficiency of the wheat-and-rice bread was greater by 9.1 per cent and the growth of rats by 7.7 per cent as compared with wheat bread even though the latter contained 12.73 per cent protein whereas the wheat-and-rice bread contained only 11.78 per cent protein. The new wheat-and-rice bread can be made in any bakery and only requires 25 per cent more yeast than is customary, but it must ferment 15 min. longer under the action of yeast, when the straight dough method is applied.

Ratings for Foods Served at Meals. This exploratory study of factors influencing soldiers' stated preferences for a constant food as served at regular meals in the dining hall was designed to investigate four possible sources of variation: (a) day of the week, (b) meal at which food was served, (c) mess hall used as test site, and (d) number of foods to be rated. Information was also obtained on changes from week to week. The test food was orange juice prepared from the dehydrate. Preference was measured by the hedonic scale. Analysis of variance showed that the effects of day of the week and number of foods were not significant; however, effects of both mess-hall and meal were significant at the 1 per cent level. Changes in rating from week to week were negligible. Implications of the findings for acceptance pretesting of military rations are discussed.

Frozen Turkey Dinners and Turkey Pies. Turkey dinners and pies, both laboratory and commercial preparations, were evaluated for flavor and other changes after storage in the range of -30° to 20°F. Stale and rancid flavors developed in from one and one-half to three months in samples held at 20°F.; significant loss of ascorbic acid in peas used in turkey dinners occurred in three months at 20°F. Mild stale flavors and occasional rancidity developed in these products after six to twelve months at 10°F. and below. Thus, these products are three to six times as stable at 10° as at 20°F. Under the conditions used, adding an antioxidant did not improve flavor stability sufficiently to warrant its use in dinners stored one year at 0°F. or six months at 10°F. Temperatures fluctuating from 0° to 20°F. and from -10° to 10°F. did not cause flavor changes differing significantly from those held at the mean temperatures of 10°F and 0°F. Peroxide values generally increased with lengthening storage time and higher temperature, but did not show sufficient correlation with rancid flavor development to serve predictive purposes. Samples held for a year at 10°F. or lower showed flavor changes only part of the time. For optimal retention of the desirable qualities of turkey dinners and pies, exposure to 20°F. should be avoided. Storage at 10°F. or lower should be limited to six months or less.

Location and Sound in Flavor Testing. Tests demonstrated that, with respect to tomato juice as evaluated by a college student panel, three locations in which flavor tests were conducted did not alter preferences, and that generalized sound, typical of a large restaurant, as contrasted to quiet, did not affect the preference results. Analyses indicate that all tasters did not agree in their individual preferences, but panel preference did not change from location to location nor with sound or quiet.

Drained Weight of Canned Cling Peaches. Drained weight and Brix readings are important factors in grading canned cling peaches. Immediately after the peaches are canned, the drained weight falls below the filling weight because fluid from peach tissue is lost to the sugar sirup due to osmosis. On storage, the weight of peach tissue increases again because of penetration of sugar into the fruit. Drained weight decreased with increase in concentration of the in-going sucrose sirup. Equilibrium Brix readings increased with increase in concentration of the in-going sirup. For dietetic canned peaches which were canned in plain water, the drained weight was higher than for those canned in sucrose sirup.

Shrinkage and Flavor of Aged Beef. The effect of various temperature, humidity, air flow, and ultraviolet radiation conditions has been studied on paired beef quarters and wholesale cuts of different weights and grades. Determinations were made of shrinkage, color, drip loss, and cooking loss; taste preferences reflecting the differential effects of the various aging treatments were studied. Effect of the different treatments on sensory values of rib and round steaks after two, four, eight, and twelve months' storage at 0°F. has been ascertained. A method of predicting shrinkage and organoleptic characteristics of beef aged under controlled environmental conditions is presented.

What Microbiologic Standards Mean. The degree of public health hazard, significance of specific microbial counts, practicality, economics, validity of opinions as to harmfulness, problems of enforcement, scope of application—these and other considerations in setting up microbiologic standards are evaluated and discussed by a scientist of the Canadian Food and Drug Directorate.

Bacterial Inhibitors and Shelf-life of Fryers. An evaluation of the effects on acceptable fryer shelf-life of chlorine and the antibiotics, chlortetracycline and oxytetracycline, was made. Fryers cooled in ice water containing 10 p.p.m. chlortetracycline had lowered bacterial counts and a longer shelf-life, as evaluated by raw odors and cooked flavor, than did those cooled in ice water, ice water plus chlorine, and ice water plus oxytetracycline. Cooked flavor differences were less noticeable. Odor and flavor scores of the chlortetracycline-treated birds were lower than controls during the first four days after processing, but were higher during the final week of evaluation. Oxytetracycline and chlorine, in these two trials, were both less effective than chlortetracycline in extending shelf-life of fryers.

Irradiation of Fresh Apple Juice. Irradiation of apple juice at 621,000 r or lower does not produce sterile juice. After irradiation at 621,000 r in the presence of sodium sorbate (0.05 per cent) and ascorbic acid (75 mg. per 100 ml.), the juices could be kept at room temperature for thirteen days without the development of microorganisms. However, alterations in flavor, viscosity, and color seriously reduced quality and acceptability.

GASTROENTEROLOGY

Vol. 34, March, 1958
*Nontropical sprue: diagnosis and therapy. M. W. Comfort.—p. 476.
*The irritable colon. J. B. Kirsner and W. L. Palmer.—p. 491.

Diet Therapy for Nontropical Sprue. The treatment of nontropical sprue includes reducing or compensating for malfunction of the small bowel and correcting deficiency states. The diet

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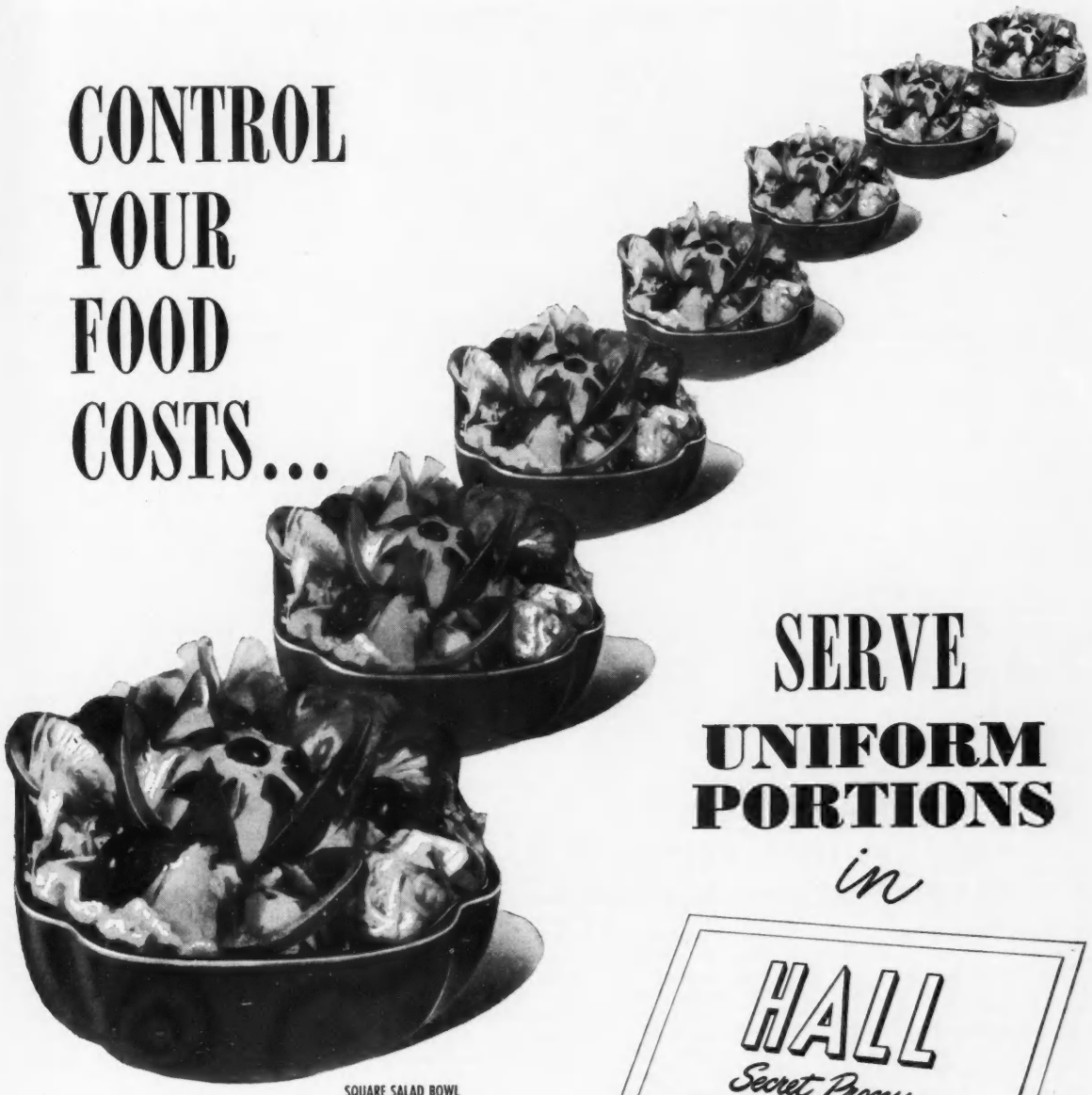

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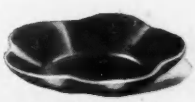

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should be low in fat and residue and high in protein, carbohydrate, and calories. Fructose and glucose should furnish a large portion of the carbohydrates. A gluten-free diet appears to be beneficial both for treatment of non-tropical sprue and for celiac disease. On the gluten-free diet, wheat flour and rye flour are excluded. This means bakery and packaged foods must be investigated before they are used. Vitamins should be supplemented.

The Irritable Colon. The bland diet is recommended for patients with an irritable colon. The laxative qualities of various foods is a determining factor in planning a dietary regimen. The diet should be adjusted to the individual according to the sensitivity of the bowel. Foods permitted and foods excluded on a bland diet are listed.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 6, March, 1958

*Cystine, tyrosine, and essential amino acid content of selected foods of plant and animal origin. C. H. Edwards and C. H. Allen—p. 219.

*Growth and reproduction of rats on diets of evaporated milks and a vegetable fat milk product. L. F. Ney.—p. 223.

Amino Acids in Foods. In recent years, emphasis has been placed on the evaluation of protein quality, rather than the total quantity of protein in foods. In this study, twenty foods commonly eaten in the U.S., including grain products, meat products, milk and milk products, and vegetables, were analyzed for twelve amino acids, total nitrogen, moisture, and ash. These data are presented in table form as grams of amino acid per 100 gm. crude protein (calculated to 16 per cent nitrogen), and as grams of amino acid per 100 gm. food. Using whole egg as a standard, on the basis of 100 gm., corn-soya, cottage cheese, and liverwurst were rated as excellent suppliers of the essential amino acids, with few exceptions. When menus cannot be based on protein of excellent quality, diets should be planned to include, simultaneously, two or more foods rated as good or fair sources of the amino acids.

Nutritive Value of Milk Products. Growth and reproduction studies were carried out with rats to compare the nutritive value of an experimental vegetable fat milk product with a conventionally processed and a high-temperature, short-time processed evaporated milk. Weanling rats maintained on the milk diets with minerals added grew well for twelve weeks. Second and third generations were successfully reared on the milk diets. Judged by the criteria of weight gain and reproduction performance, the milk product made from non-fat milk solids, vegetable fats, and water, and fortified with vitamins was somewhat better nutritionally than the other two milks. The poorest performance was shown by the rats fed the conventional evaporated milk, which appeared to be inadequate to meet the needs during repeated gestation and lactation.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 166, March 8, 1958

*Brucellosis and heart disease. IV. Etiology of calcific aortic stenosis. T. M. Peery.—p. 1123.

*Fasting as a therapy. Foreign Letters–Japan.—p. 1236.

*Allergy to mushrooms. Questions and Answers.—p. 1262.

Vol. 166, March 15, 1958

*Fecal incontinence—nonsurgical treatment. R. J. Jackman.—p. 1281.

*Food poisoning due to zinc. Foreign Letters–United Kingdom.—p. 1359.

*Diet following operation on large intestine. Questions and Answers.—p. 1406.

Vol. 166, March 22, 1958

*Current status of therapy in regional ileitis. B. B. Crohn. Council on Drugs.—p. 1479.

*Phenylketonuria and special diet. Correspondence.—p. 1507.

Vol. 166, March 29, 1958

*Abnormalities of calcium metabolism in patients with "idiopathic" urinary calculi. Effect of oral administration of sodium phytate. W. H. Boyce, F. K. Garvey, and C. E. Goven.—p. 1577.

*Diet for weight reduction. Questions and Answers.—p. 1660.

*Excessive protein intake. Questions and Answers.—p. 1663.

*Vitamin K in foods. Questions and Answers.—p. 1666.

Vol. 166, April 5, 1958

*Urinary excretion of vitamins. Foreign Letters–India.—p. 1769

*Dietary fat and coronary disease. Foreign Letters–United Kingdom.—p. 1772.

*Artificial coloring of fruits. Questions and Answers.—p. 1799.

*Vitamin and mineral supplements during pregnancy. Questions and Answers.—p. 1803.

Brucellosis and Heart Disease. Because of inconsistencies in the popular theories regarding calcific aortic stenosis, another explanation has been sought for this common form of valvular heart disease. The valve lesions encountered after fatal brucellosis closely resemble those in calcific aortic stenosis. A similar type of chronic aortic valve disease was recognized in nine patients who recovered from brucellosis. Calcific aortic stenosis is chiefly a disease of men, corresponding to the sex incidence of brucellosis. It is proposed that brucellosis is the chief cause of calcific aortic stenosis.

Fasting as a Therapy. Fasting is being widely prescribed in Japan as a panacea by various lay and religious groups. First-day patients are given a bowl of rice gruel; on the second day, rice water is given morning and evening; and from the third day on, nothing but water. Patients with mild illnesses are so treated for a week, then sent home as cured. More serious illnesses are thus treated for a month or longer. No drugs are given. A man with chronic dyspepsia died in a regular hospital after being on this fasting therapy. After a review of the circumstances, it will be decided whether the man operating this fasting therapy was practicing medicine without a license and whether he should face a charge of manslaughter.

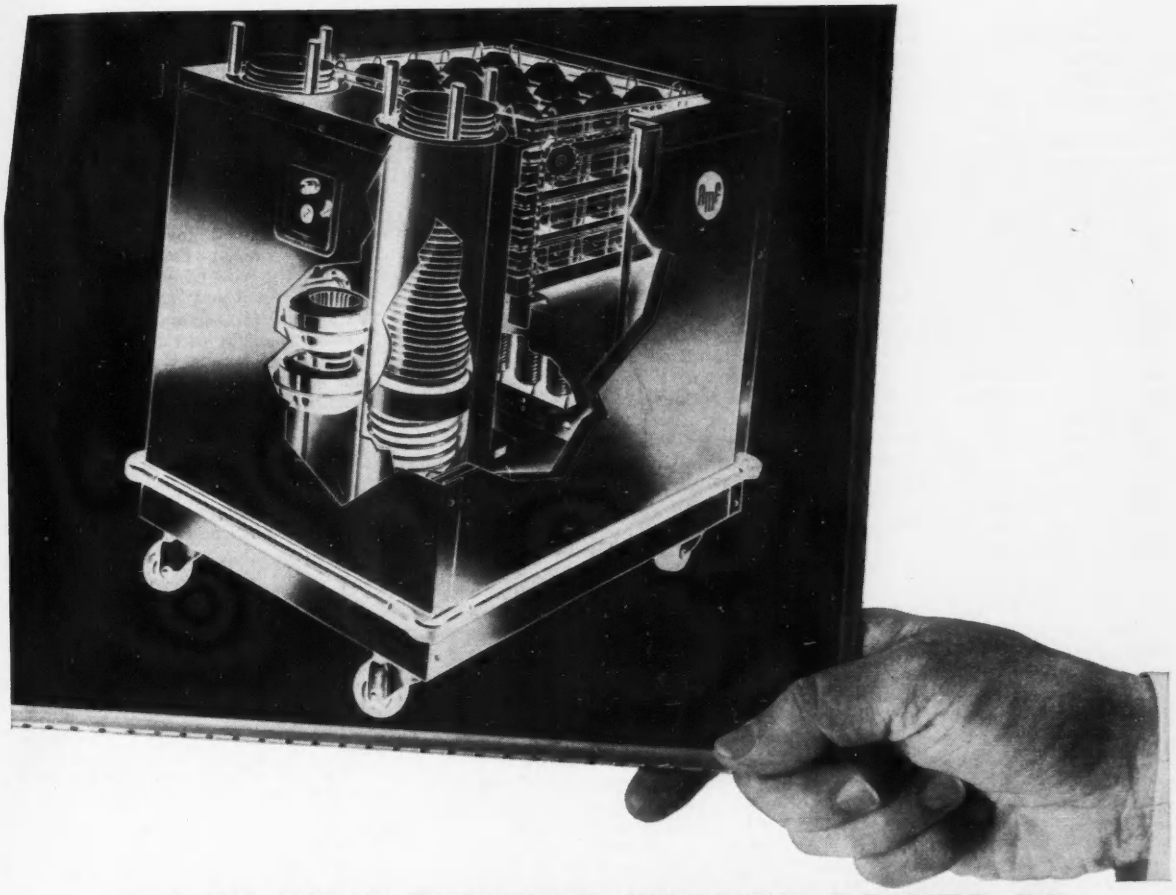
Allergy to Mushrooms. An inquiry is made as to whether parenteral or oral desensitization with mushroom extracts may be expected to give any degree of tolerance for mushrooms. This procedure seems completely unnecessary; avoidance is the main treatment. It might be well to prove the allergy to mushroom by doing a scratch test with mushroom extract. Skin tests should also be done for the yeasts and fungi as these are closely related to mushrooms.

Fecal Incontinence. In the treatment of fecal incontinence, non-surgical measures are often as important as the surgical, and in patients whose incontinence is neurogenic, as in paraplegia, only non-surgical therapy can help. Fecal incontinence is frequently the unfortunate price that must be paid for life-saving surgery, and at least half of the patients who complain of this condition date its onset to some surgical procedure. Non-surgical measures for fecal incontinence fall into five phases: diet, drugs, irrigations, exercises for the anal muscles, and psychotherapy. The diet is of a low-residue type and should be as simple as possible for the patient to follow. A convenient method is to give a list of foods that may be included in the diet and a list to be excluded. The patient's fluid intake should be limited, and a complete vitamin supplement should be given. A sample of a minimum-residue diet is presented in table form.

Zinc Food Poisoning. Eight outbreaks of food poisoning due to zinc occurred in England and Wales in the fifteen-year period, 1942 to 1957. The interval from ingestion to onset of symptoms ranged from within 10 min. to 3 hr. Symptoms were mainly vomiting, with or without nausea, and recovery was rapid. Four outbreaks were traced to stewed apples, two to bilberry juice, one to rhubarb, and one to mashed potatoes. The source of the zinc was the galvanized container in which the food had been soaked, cooked, or stored after cooking. Although some contend that so-called zinc poisoning is due to lead, since lead is present in most zinc coatings, no lead was found in at least two of the outbreaks in which other metals were sought.

Diet after Intestinal Operation. Ideas differ widely with respect to the diet indicated after operations on the large intestine. Presumably the question refers to resection of a portion of the colon for cancer or for diverticulitis. In such instances the lesion is removed, and there is no reason for dietary restriction. If abdominal distress is present, there may be other reasons for restricting the diet.

Regional Ileitis. Ileitis, which usually begins in youth, is a low-grade disease of the small bowel, involving 8 to 16 in. of the terminal loop of the ileum. The disease is non-specific in nature, and the cause is unknown. Symptoms include diarrhea, abdominal pain, loss of weight, a moderate



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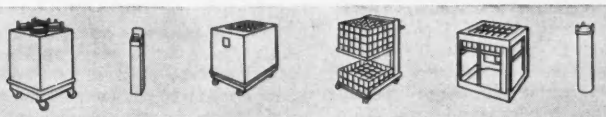

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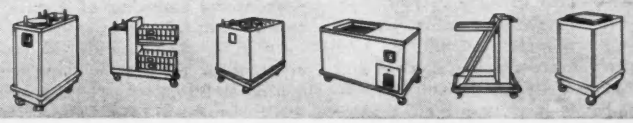

secondary anemia, and the formation of a tender mass in the lower part of the abdomen. Regional ileitis is not entirely a surgical disease. Surgery is necessary when abscesses and fistulas appear, when there is an intestinal obstruction, or when there is hemorrhaging. When surgery is not necessary, a plan of medical therapy is recommended, including dietary management. The diet should be general and generous and include all proteins, carbohydrates, and, to a more limited degree, fats. With the exception of raw fruits and vegetables, which constitute roughage, the diet should be tasty, flavored, and unrestricted. Puréeing of vegetables is unnecessary. Both physical and mental rest is also essential. Most drugs used are not curatives but aid in relieving symptoms and, coupled with proper diet, can lead to control of the disease.

Phenylketonuria. This article in the Correspondence section is of interest to anyone working with phenylketonuric children. The basis of the special diet is an hydrolysate of milk protein and casein from which phenylalanine has been removed. Two such products are described in this letter and supplementary foods are briefly discussed. No one knows how long the diet will be necessary, but there is some evidence to suggest that it may not be necessary beyond two or three years of age. It is impossible to draw final conclusions from such a small short-term sample. It is hoped that one day the missing enzyme will be identified and made available so that a special diet will not be necessary at any age.

Urinary Calculi. Patients with "idiopathic" renal calculous disease in the active stages exhibit a significantly elevated urinary calcium excretion on diets which contain as little as 350 mg. calcium per hr. The increased renal excretion of calcium is a result of increased intestinal absorption, and many factors, such as high-calcium, high-protein, and high-vitamin D intake, greatly accelerate calcium absorption. Sodium phytate forms an unabsorbable complex with calcium in the intestinal tract. It can cause a distinct and sustained reduction of urinary calcium, but regression or disappearance of existing calcified stones has not been observed. The data from this study indicate that individual differences and derangements of calcium metabolism exist and that a regimen of low-calcium, low-vitamin D intake with sodium phytate by mouth sometimes affords helpful diagnostic clues in differentiating idiopathic hypercalciuria from metabolic or bone disease. This regimen has possibilities in both the preoperative and the postoperative care of patients with urinary calculi.

Diet for Weight Reduction. A diet for weight reduction should be adequate in all essential nutrients but restricted in calories. It should closely resemble a good or normal diet so that the patient may learn proper eating habits. It is felt that the lean-meat-and-fat diet, based on the work of Pennington, does not fulfill these criteria. The high-fat content of this diet may be undesirable in view of its possible relationship with the development of atherosclerosis. However, much needs to be learned about this relationship. The question as to the least harmful diet in obesity is one that provokes many schools of opinion. The most reasonable reducing diet to employ is one that maintains normal proportions of fat, proteins, and carbohydrates and simply limits the total quantity of the mixture.

Excessive Protein Intake. It is felt that no harmful consequences would accrue in the daily eating of one cup of cooked egg whites. However, there are other proteins of equal value. The difference in biologic values among egg whites, meat, fish, and chicken is very small.

Vitamin K in Foods. There is very little information in the literature about vitamin K content in foods, especially in frozen foods. There is no evidence available to show that frequency of heart attacks results from any differences of vitamin K in food intake. It would seem that a coronary patient would benefit more from a decreased prothrombin time, since blood clotting is the major concern.

Urinary Excretion of Vitamins. A study was made of the relationship between deficiency of B-complex vitamins and the toxemias of pregnancy. The test dose used was 5 mg. each of thiamine and riboflavin and 50 mg. niacin. The percentage return of each vitamin after giving the test dose was determined. There was no relation between the test dose return of any of these vitamins and the levels of their urinary excretion.

Dietary Fat and Coronary Disease. It is felt by this author that for people who have already had a coronary thrombosis, who suffer from angina pectoris, or who have a strong family history of coronary disease, reduction of serum cholesterol levels in excess of the mean for age and sex is desirable if this can be achieved by simple dietary modification and that such reduction might improve the expectation of life and health. On the other hand, the situation is too uncertain to justify radical changes in diet for everyone. The case for dietary modification must be judged in each case in relation to the trend of serum cholesterol readings and the extent to which there is a risk of coronary occlusion. Restriction of fat should not be too strict; 30 per cent of the caloric intake from fats is reasonable. There is no evidence that the dietary cholesterol contributes materially to serum cholesterol.

Artificial Coloring of Fruits. Synthetic coal tar dyes have been used only since the middle of the last century in the artificial coloring of fruits. Before that, coloring materials were of natural origin. The U.S. government permits food manufacturers to use only such batches of coal tar dyes as have been tested by the Food and Drug Administration. These are known as "certified" dyes. It is not indicated that the coal tar dyes in use are carcinogenic.

Supplements During Pregnancy. It is felt that the level of nutrient intakes recommended by the National Research Council for pregnant and lactating women can be attained through the use of properly chosen foods and without the addition of vitamin and/or mineral supplements. If there is doubt of adequacy of this diet, it may be desirable to administer iron, calcium, vitamin D, and the B vitamins.

JOURNAL OF AVIATION MEDICINE

Vol. 29, March, 1958

*Preventive medicine aspects of flight feeding. A. A. Taylor.—p. 206.

Flight Feeding. Two new means of meeting flight feeding needs are described. The foil-pack system of feeding provides freshly cooked, hot meals to crews and passengers on patrol, transport, and cargo aircraft, and the compact box lunch is used in combat jet aircraft. The compact box lunch includes food for a 20-hr. period which meets present flight feeding needs. Both systems have been tested extensively during flight in suitable aircraft, and now provide adequate means of flight feeding in the situations for which they were developed.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 37, March, 1958

*The influence of blood glucose on the renal clearance of phosphate. E. R. Huffman, C. J. Hlad, Jr., N. E. Whipple, and H. Elrick.—p. 369.

*Magnesium conservation in the human being on a low magnesium diet. B. A. Barnes, O. Cope, and T. Harrison.—p. 430.

Blood Glucose and Renal Clearance of Phosphate. Studies on the influence of blood sugar and phosphate levels on phosphate excretion by the kidneys of forty men are presented. These data indicate that the concentration of glucose and phosphate in the blood exerted powerful, sensitive, and independent influences on phosphate excretion by the kidney. At hyperglycemic levels, the influence of blood glucose predominated over that of plasma phosphate, whereas at hypoglycemic levels the influence of plasma phosphate took precedence. It is concluded that this mechanism may play an important physiologic role in the minute-to-minute regulation of renal phosphate excretion in man and that other factors (such as insulin) may exert their influence via alteration of blood glucose or phosphate levels.

Magnesium Conservation. The application of a liquid diet containing less than 0.12 mEq magnesium per liter to four volunteers permitted a study of the conservation of magnesium by humans over a ten-day

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period. Renal conservation prevented maximum losses in excess of 1.5 mEq per day. On the average, less than 1.0 mEq of magnesium per day was excreted in the urine. Stool excretion of magnesium while on a liquid diet was negligible after a transitional period. Magnesium, like sodium, is a component of the body that can be rather rigidly conserved in the presence of a specific deficiency. This is in contrast to potassium where an obligatory loss of significance has been established in essentially normal circumstances. The adult maintenance requirement may approximate 1 mEq magnesium per day.

JOURNAL OF HOME ECONOMICS

Vol. 50, March, 1958

*Effect of holding and reheating on the ascorbic acid content of cooked vegetables. V. R. Charles and F. O. Van Duyne.—p. 159.

Ascorbic Acid in Cooked Vegetables. The effects of refrigerator storage and of reheating on the ascorbic acid in cooked vegetables were investigated. Cooked broccoli, Brussels sprouts, shredded cabbage, sliced cabbage, cauliflower, peas, and snap beans lost significant amounts of ascorbic acid during one day's refrigeration. Cooked asparagus did not lose significant amounts, and spinach varied in the two experiments. All of the reheated products, stored for one day in the refrigerator prior to reheating, retained significantly less ascorbic acid than did the freshly cooked products. Ascorbic acid in the cooking liquids was stable during holding and reheating. Extension of the refrigerator storage period to three days resulted in greater losses of ascorbic acid from the vegetables studied, and the majority of the day-to-day losses were significant except in the case of asparagus.

JOURNAL OF J. J. GROUP OF HOSPITALS AND GRANT MEDICAL COLLEGE

Vol. 3, January, 1958

*Paper electrophoresis of serum proteins in protein malnutrition. B. D. Patel, M. Jadhav, B. B. Gaitonde, and G. S. Rao.—p. 40.

Electrophoresis of Serum Proteins. In previous communications these workers have reported on the clinical and biochemical aspects in protein malnutrition. In this paper observations on the electrophoretic pattern of serum protein in malnutrition are presented. Protein values in different clinical grades of malnutrition and of normal children are compared to evaluate a relationship between clinical status and biochemical changes. Total proteins, albumin, and globulins fall as edema increases in severity. In severe grades of malnutrition, there is a marked fall in albumin but a rise in gamma globulins. Alpha 2 fraction rises as the degree of edema increases, while beta-globulin shows a lower level. However, a fall in albumin does not seem to be the only factor responsible for the development of edema. The importance of other biochemical factors, such as hormonal and electrolyte, involved in edema production is stressed. These need further study.

JOURNAL OF NUTRITION

Vol. 64, January, 1958

*The effect of the ingestion of ascorbic acid and dehydroascorbic acid upon the blood levels of these two components in human subjects. H. Linkswiler.—p. 43.

*Nitrogen balances of women maintained on various levels of methionine and cystine. M. S. Reynolds, D. L. Steel, E. M. Jones, and C. A. Baumann.—p. 99.

*The nutritive value of bread flour proteins as affected by practical supplementation with lactalbumin, nonfat dry milk solids, soybean proteins, wheat gluten and lysine. H. W. Howard, W. J. Monson, C. D. Bauer, and R. J. Block.—p. 151.

Ascorbic Acid in Serum. Previous studies have shown that man is capable of reducing dehydroascorbic acid. This present experiment was designed to measure the extent and rate of reduction of dehydroascorbic acid by determining the ascorbic acid and total ascorbic acid (ascorbic plus dehydro) in serum before and at various intervals following ingestion of dehydroascorbic acid and ascorbic acid. After ingestion of either, there was a rapid rise in ascorbic acid and total ascorbic acid in serum. The increase was independent of the form of the vitamin given.

Methionine, Cystine, and Nitrogen Balance. Observations on self-selected diets of women suggest that methionine intake is the amino acid intake most apt to be less than the minimal daily requirement set by Rose. It was later shown that L-cystine can replace 80 to 89 per cent of the methionine requirement. The present study presents nitrogen balance data on twenty-one women fed semi-synthetic diets furnishing various levels of methionine and cystine. From these data it appears that a total of 550 mg. methionine and cystine is adequate for the establishment of nitrogen balance in the women in this study.

Bread Flour Protein Supplementation. Lysine was shown by Osborne and Mendel to be the amino acid which limits the nutritive value of wheat proteins. Although bread flour contains sufficient total protein (13 per cent of the calories), less than half of this protein is available to the animal for new tissue formation. What is desired is a protein mixture which will supply the optimal proportion of amino acids. The composition of this ideally balanced "complete protein" is not known. From evidence available on the amino acid composition of various adequate and inadequate diets, the authors have tentatively assumed that a "complete" protein should contain 5.3 gm. lysine per 16 gm. nitrogen. The secondary and tertiary amino acid deficiencies of wheat flour were not investigated. A method is proposed for calculating in numerical terms the supplementary value of one or more proteins for a food primarily deficient in a single amino acid. Lysine hydrochloride is the supplement of choice. Nonfat dry milk solids have limited supplemental value since the protein concentration is low. Isolated soybean proteins provide a complete protein but supply little extra lysine. Lactalbumin has a high supplementary value as it is a complete protein and provides extra lysine. The futility of adding wheat gluten to bread is apparent. Data are given which confirm lysine as the limiting amino acid in wheat flour diets, and the rate of growth is not affected by the inclusion of other amino acids furnished by the supplementary protein. Isonitrogenous diets in which high-protein or low-protein wheat flours supply all the protein give equal lysine intakes and equal rates of growth.

JOURNAL OF PEDIATRICS

Vol. 52, March, 1958

*The trace element selenium and its influence on dental caries susceptibility. D. M. Hadjimarkos and C. W. Bomhorst.—p. 274.

*Cobalt-induced goiter with cardiomegaly and congestive failure. J. A. Little and R. Sunico.—p. 284.

Selenium and Dental Caries Susceptibility. It appears that in a manner yet unknown, the trace element selenium may be a factor contributing toward an increased susceptibility to dental caries. Undoubtedly, a number of additional studies with experimental animals and human beings are necessary, not only for confirmation of the relationship suggested here but also for an understanding of the exact mechanism through which selenium may exert its harmful effects on teeth. In this study, carried out on Oregon school children, the findings indicate that selenium may be a factor responsible for increasing the susceptibility to dental caries attack.

Cobalt-Induced Goiter. A case of presumed cobalt-produced goiter is reported. The relationship between the cardiac failure and the goiter is discussed. The potential hazard of the indiscriminate use of cobalt in patients in whom iron therapy alone is sufficient is further emphasized. The occurrence of a full fontanel following tetracycline therapy is mentioned. This phenomenon has been observed on several occasions. The relative polycythemia as a result of the cobalt therapy is illustrated.

THE LANCET

No. 7016, February 15, 1958

*Essential fatty acids, lipid metabolism, and atherosclerosis. L. W. Kinsell, G. D. Michaels, R. W. Friskey, and S. Splitter.—p. 334.

No. 7017, February 22, 1958

*Blood coagulation before and after a fatty meal. In patients with coronary-artery disease and in healthy controls. J. R. O'Brien.—p. 410.

Essential Fatty Acid Metabolism. The addition of purified ethyl and glycerol esters of linoleic acid to the diet lowers the plasma-lipid levels in

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healthy and unhealthy people. The addition of oleic-acid preparations does not do this. On the basis of these and earlier observations, it can be concluded that the major active ingredient in various vegetable fats responsible for lowering the plasma cholesterol is linoleic acid. Results obtained with a phosphatide mixture containing arachidonic acid suggest that this acid may be much more potent, gram for gram, in lowering the plasma-cholesterol level than linoleic acid, at least under the conditions noted. There is some evidence that palatable mixed diets rich in essential fatty acids, in addition to lowering the plasma-cholesterol level, are also associated with clinical improvement in patients with arterial degenerative disease. Evidence is presented that the prescription of a low-fat diet is biologically unsound.

Blood Coagulation before and after a Fatty Meal. Twenty-one men with coronary thrombosis, ages forty to sixty, were compared with twenty-one healthy men of similar ages. Tests were made before and 4 hr. after a fatty meal. The tests, including a new test, the heptane-accelerated stypven time, measured the clotting time by many methods. Postprandial changes were found in both groups in all tests, including a highly significant shortening of the clotting-time of whole blood in the presence of powdered glass, whereas the shortening of the clotting-time in glass and in silicone-treated glass was significant only at a 5 per cent level. No significant differences between the two groups either before or after the meal were found. These findings lend no support to the suggestion that postprandial hypercoagulability is responsible for the alleged connection between the fat-content of the diet and coronary thrombosis.

THE LICENTIATE

Vol. 7, January, 1958

*Study on nutritional status of expectant mother. A. Dhillon, N. Budhiraja, and S. Khan.—p. 325.

*Diet survey of a group of health officers. J. Singh.—p. 332.

Nutrition of the Expectant Mother. This study on the nutritional status of seventy-five mothers was carried out in the area covered by Primary Health Center Najafgarh. All but three women were vegetarians. The main diet consisted of wheat, bajra, grams, and green gram leaves as these are agricultural products of the area. Grade A protein, vitamin A, ascorbic acid, and calcium were deficient in most of the diets. It is doubtful if any of them carried out the advice given about diet. There was no history of complication during previous and present pregnancy. There was no appreciable weight gain among the seventy-five women when compared with non-pregnant women in the same area.

Diet Survey of Health Officers. This paper is the result of the survey of the diet consumed by a group of would-be health officers of India. Their diet showed, as is usual with Indian diets, a deficiency of protein, calcium, iron, and vitamin A. However, it was adequate in respect to calories, thiamine, niacin, and ascorbic acid, which are also deficient in the majority of Indian diets. It is clear that theoretical knowledge of principles of nutrition improves the diet in the right direction, but not up to the required extent. Teaching of nutrition in schools and to the masses may not provide a complete answer to the problem of malnutrition in India.

THE MEDICAL CLINICS OF NORTH AMERICA

January, 1958

*Fragile diabetes. J. T. Paul.—p. 25.

*Congestive heart failure due to less common forms of heart disease. J. Van Elk and P. J. Talso.—p. 79.

March, 1958

*Chronic refractory mouth disorders in the aged. C. M. Epsteen.—p. 481.

*Acne. A. L. Lorincz and S. Rothman.—p. 497.

Fragile Diabetes. Diet is of utmost importance in the diabetic patient. The diet for the patient with fragile diabetes is calculated in a similar manner to the usual diabetic diet. Age, physical activity, weight, and sex all share in determining the total calories needed. Carbohydrate values range from 125 to 200 gm., whereas, protein values range from 110 to 130 gm. A high-protein intake tends to stabilize the blood sugar. Because of growth and activity, the child requires proportionately more calories than an adult. The importance of the time of feeding and the food given the fragile diabetic person cannot be overemphasized. The distribution and the time of the feedings depend on the insulin used. The child with diabetes needs mid-morning and mid-afternoon feedings because his reactions are so unpredictable and because of strenuous activity. Extra precautions are needed for the person with fragile diabetes because of the easily disturbed balance in the body.

Sodium and Congestive Heart Failure. A patient with heart disease is usually placed on a low-sodium diet. However, response is not always as promising as it should be. The patient may actually be getting more sodium than prescribed, both in the hospital and at home. Removing the salt shaker does not assure a low-sodium diet. A few of the items which should not be given the patient include: baking soda, flavor enhancers (monosodium glutamate), celery salt, garlic salt, "smoked" salt, baking powders, butter, bacon, ham, herring, and smoked or spiced meats. The development of flame photometry now makes the testing of foods for sodium content more reliable.

Vitamin Deficiencies in the Aged. Elderly patients frequently complain of a sore mouth and burning tongue. Vitamin deficiencies may cause such symptoms. The most common deficiencies are those of niacin, riboflavin, folic acid or pyridoxine, or a combination of two or all. Frequently elderly patients erroneously dispense with bulk and quality in their diet believing these to be necessary only in earlier periods of life. Good results are achieved with a well balanced diet supplemented with prescribed vitamins.

Diet and Acne. During adolescence and early adulthood, acne occurs in a large number of boys and girls. The relationship of diet to the disease is debatable, although restriction of carbohydrate intake may be of value. Vitamin therapy is of negligible value. Prolonged consumption of large doses of vitamin A is unwise. Recommended measures are: adequate rest, freedom from stress, and good scalp hygiene.

MILITARY MEDICINE

Vol. 122, March, 1958

*Feeding challenges in a domiciliary. I. G. Dubar.—p. 190.

Feeding Challenges in a VA Domiciliary. Veterans living in a domiciliary look to the dietitians for food that is carefully prepared and served in an appealing manner. The menu planning starts with a good hearty breakfast in this VA Center in Texas. The success of the planning is witnessed by the fact that 94 per cent of the occupants eat breakfast. The veterans are served cafeteria style with a selective menu. The menu is planned each week avoiding repetition. As with breakfast, painstaking, fresh, and discriminating meals are planned for dinner and supper. There is no cyclic system of menu planning. The large breakfast is planned because for many this is the best meal of the day. Careful selection and preparation of vegetables has made them more popular. Salads have become popular through education of the veterans. The choice of desserts must be planned particularly for the weight watchers. The veterans on diabetic diets have their trays checked by the dietitian or food supervisor to be sure they are following their dietary orders correctly. Contacts with those on regular and modified diets help evaluate the goal in domiciliary care.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 258, March 6, 1958

*Glucagon treatment of insulin reactions. H. Elrick. T. A. Witten, and Y. Arai.—p. 476.

Vol. 258, March 20, 1958

*Effect of small doses of estrogen on serum lipids in female patients with myocardial infarction. J. Marmorston, O. Magidson, J. J. Lewis, J. Mehl, F. J. Moore, and J. Bernstein.—p. 583.

Glucagon in Insulin Reactions. Studies on the treatment of forty-one induced and spontaneous insulin reactions in patients with diabetes with crystalline glucagon are presented. One or 2 mg. glucagon administered

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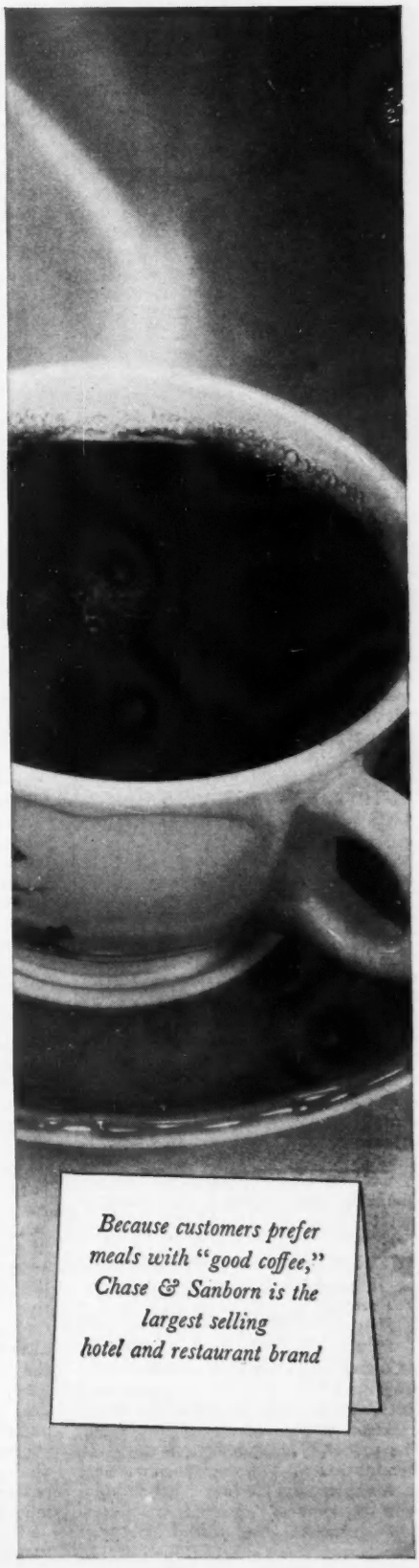

intramuscularly or subcutaneously was effective and convenient in promoting relief during hypoglycemic attacks. The advantages of glucagon over glucose for the treatment of certain types of insulin reactions, both in the hospital and at home, are discussed.

Estrogen and Myocardial Infarction. Ethinyl estradiol was administered, without interruption, in amounts of 10 mcg. daily, to twenty-six postmenopausal women who had sustained a myocardial infarction. These doses had no untoward clinical effects. There was a fall in serum cholesterol, a rise in phospholipid, and a fall in cholesterol-phospholipid ratio of the same magnitude reported by other investigators using large doses. The lipid changes were progressive during the first six or seven months. By that time the cholesterol - phospholipid ratio had generally reached normal or low-normal levels. Further changes upward or downward were not observed thereafter in observations extending to a maximum of thirty months. The effect of estrogen on the serum lipids appeared to be clearly determined by the pretreatment pattern. If this was initially normal, there was little or no effect, and the greater the initial abnormality, the greater the changes under treatment. This observation, together with other considerations, suggests that estrogen may have a homeostatic effect on the serum lipid levels.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 28, January, 1958

*The riboflavin requirement of animals and man and associated metabolic relations. Part I. Technique of estimating requirement, and modifying circumstances. F. Bro-Rasmussen.—p. 1.

Riboflavin Requirement. This is the first of a two-part review which has in itself a double aim. First, it will try to show that what determines the significance and quantitative requirement of riboflavin is its part in transport of oxygen and hydrogen, which means a direct relation to total energy turnover. Then it will try to explain certain contradictions and the findings which have made it possible to assume a direct relation between riboflavin requirement and protein metabolism.

NUTRITION REVIEWS

Vol. 16, March, 1958

*The program of the Council on Foods and Nutrition of the American Medical Association. P. L. White.—p. 65.

Council on Foods and Nutrition. The program of the Council on Foods and Nutrition of the American Medical Association has recently been revised. The principal change, other than the termination of the well known "Seal of Acceptance Program," has been a reinforcement of activities in nutrition education. Two of the most significant activities are the sponsorship of nutrition symposia and the presentation of special articles in the Council columns of the *Journal of the American Medical Association.* The articles review and interpret research studies and sometimes are used to combat misinformation and discourage food fads, fallacies, and incorrect interpretations. The Council has started a question-and-answer symposium held in cooperation with the Nutrition Foundation at its annual meetings. Although the "Seal of Acceptance Program" has been eliminated, the Council has retained its active interest in the production, labeling, and proper promotion of food and has recently published a booklet summarizing this experience. The Council also works in cooperation with national agencies on research studies. The eleven members of the Council, who serve without remuneration, may serve two five-year periods and are selected because of their knowledge of nutrition, food composition, and health.

PROCEEDINGS OF THE NUTRITION SOCIETY

Vol. 17, No. 1, 1958

*The case for fortified flour. D. W. Ken-Jones.—p. 38.

*The quantity and quality of protein for human nutrition. B. S. Platt and D. S. Miller.—p. 106.

Fortified Flour. This article deals with facts concerning fortified flour. There is a strong preference in Britain for white bread made from 70 per cent extraction enriched flour as against the slightly darker bread made from 80 per cent extraction flour. A true 80 per cent extraction flour may give a more widely spread insurance against possible, but as yet unproved, deficiency in the rest of the diet. The 70 per cent enriched flour, however, gives a more certain cover against possible deficiency of thiamine, niacin, and iron. It is felt by this author that the lowering of the extraction rate from 80 per cent to 70 per cent is very unlikely to lead to any nutritional disturbance from lack of the rarer components of the B vitamins.

Quantity and Quality of Protein. Various aspects of protein requirements are presented. Physiologic and pathologic factors affecting protein requirements, dietary factors in the evaluation of the protein element in human nutrition, and protein values of human dietaries for various types of consumers are discussed. Quantitative recommendations of the FAO Committee on Protein Requirements are tentative. The Committee stresses the need for further research. Two main areas that need development are: (a) the expression of human requirements in terms of a reference protein of high nutritive value, and (b) the adoption of a provisional pattern of essential amino acids for man which provides a basis for estimating the nutritive value of a diet from its amino acid composition. The biologic value of a protein has been shown not to be static, and it does alter with changes in the concentration of protein in the diet. Some of the work done from fifty to one hundred and fifty years ago on proteins is mentioned, and it is felt that some of this work is good and much of it is highly relevant to present-day problems.

PSYCHOSOMATIC MEDICINE

Vol. 20, January-February, 1958

*Pathogenesis in human obesity. Function and disorder of a mechanism of satiety. A. J. Stunkard and H. G. Wolff.—p. 17.

Hyperphagia. It has long been thought that overeating is a result of an increased drive to eat. Evidence from animal experiments suggests that overeating can result either from increased activity of the feeding centers or from decreased activity of the satiety centers. The possibility of an impaired "glucostatic" mechanism in obese persons was tested, the impairment consisting of an inadequate signaling of an adequate carbohydrate supply to the food-regulatory centers of the hypothalamus. There was evidence that this did not occur. It has been found that intravenously administered glucose is removed from the peripheral blood at a greatly increased rate in the obese person during periods of stress. If ingested glucose were removed from the blood with equal rapidity, it could provide a stimulus to the glucostatic mechanism for only a very brief period of time, and thus might fail to interrupt the periods of overeating in more than a transitory manner. Quite often the obese person eats in the evening. This "night-eating syndrome" appears to lead to morning anorexia which may last far into the afternoon. When the person does start to eat, larger and larger amounts of food are taken at shorter and shorter intervals. The findings in this study do not indicate that obesity results only from an increased drive to eat. If this were true, the person's food intake would be more evenly distributed throughout the day. The failure of the satiety mechanism may well be the explanation for excessive food consumption and involve a disturbance in carbohydrate metabolism.

SCIENCE

Vol. 127, March 7, 1958

*Growth of children of the same race under different environmental conditions. W. W. Greulich.—p. 515.

Vol. 127, March 14, 1958

*Evidence for the metabolism of maleic acid in dogs and human beings. W. Sacks.—p. 594.

Growth of Children and Environment. In this study the stature, weight, sitting height, and skeletal age of 898 American-born Japanese children in California were compared with the corresponding data for children of the same sex and age in Japan. As was anticipated, the California children were significantly taller, heavier, and more advanced in their skeletal

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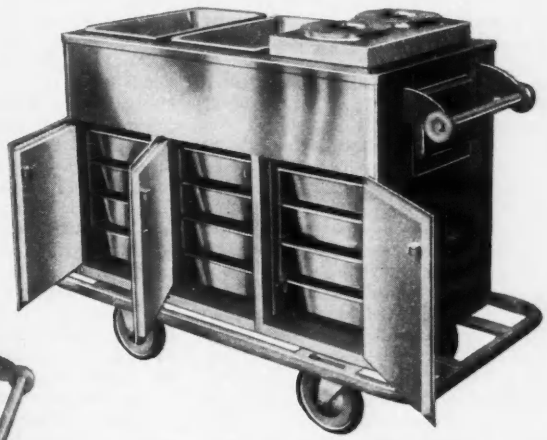

Model 10004
Extra capacity! Carries meals, hot and cold, for 300 persons. Note how fractional size pans may be used on top deck to serve a great variety of foods — or this and other models. Well on end of cart opposite push handle has toggle switch permitting hot or cold use — on all Serv-Mobiles.

Model 10002
Smallest of the Serv-Mobiles, yet has capacity to serve 125 meals. Use of entire lower compartment for full and fractional size pans provides flexibility for selective and special diet service.

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The IDEAL Serv-Mobile represents a new concept in mobile mass feeding. It is especially designed to handle the problem of feeding large numbers of persons at a distance from the food preparation area. It solves the dual problem of transporting large quantities of bulk food while maintaining proper serving temperature of both hot and cold items — and provides a suitable serving unit when the feeding area is reached.

It's extraordinary capacity, easy maneuverability by one operator, use as a practical serving counter, wide variety of fractional pan combinations and many other versatile features, give the Serv-Mobile unprecedented flexibility in solving the problems of decentralized mass feeding. It is ideally suited to hospital, school and large institution feeding systems. Inquire how Serv-Mobile can help solve your particular feeding problem.

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development, but the magnitude of the observed differences was not anticipated. The findings on the American-born Japanese children do not support the view that the less advanced skeletal status of the children in Japan is attributable to some racial difference between Japanese and Caucasians. It seems more probable that, like their smaller average stature and their relatively shorter legs during childhood, the skeletal retardation of the children in Japan results from a less adequate diet and from other environmental conditions which are not so conducive to optimal growth as in this country.

Metabolism of Maleic Acid. Evidence of the presence in dogs and human beings of enzyme systems capable of oxidizing maleate-2-C_{14} to $C_{14}O_2$ is given. Although the intermediate steps have yet to be elucidated, it is indicated that mammalian tissues are capable of catabolizing maleic acid to carbon dioxide.

SOUTHERN MEDICAL JOURNAL

Vol. 51, March, 1958

*Effect of lecithin feeding on serum lipoproteins. A. J. Barak, M. J. Carver, H. P. Jacobi, and J. A. Smith.—p. 346.

Effect of Feeding Lechithin on Serum Lipoproteins. Aged patients with a diagnosis of psychosis with cerebral arteriosclerosis who were fed a dietary supplement of lecithin for ninety days demonstrated a definite lowering of serum S_f 12-20 lipoprotein concentration followed by a return to above the initial level at the end of the feeding period. The S_f 12-100 fraction was observed to decrease in concentration in the men but increase in the women. The S_f 0-12 lipoprotein fraction remained unchanged in concentration during the experimental period. In view of the ability of lecithin to reduce transiently the S_f 12-20 lipoprotein concentration, it is suggested that intermittent lecithin feeding may retard atherogenesis.

AMERICAN RESTAURANT MAGAZINE

Vol. 42, March, 1958

*Profit blueprint for modern restaurant operation. G. L. Wenzel.—p. 44.

*A pattern for planning better menus. W. Eliason.—p. 67.

Vol. 42, April, 1958

*A basic salad with a new daily look. L. D. Freeman.—p. 75.

Planned Buying. Planned buying is a method of purchasing which requires that the institution manager analyze and determine approximately his needs for each commodity for a three-month period. Planned buying requires that the purchaser discuss his needs with a dependable supplier and leave the order with him on a current price basis. Under this method, serious consideration must be given to each item. Sample cans should be cut into and tested and graded, just as they would be under government inspection conditions. The planned buying method especially stresses sampling. After a good quality is ascertained, the buyer should note the code numbers on the bottom of the can, and then buy a sufficient quantity to last three to six months. Buy only the best grades, and do not split up orders. Order everything from one reliable source for best service and consistent quality.

Planning Better Menus. To avoid deadly repetition on menus, a large chain uses a menu planning book to provide a wide selection of foods and to prevent the menu from becoming stereotyped. The menu pattern is set up each day to include fried chicken, fish, roast meat, solid meat, stew meat, ground meat, and meatless or meat-substitute entrées. The accompaniments for these main items are also standardized and include a long list of breads, vegetables, salads, and bakery goods which change from day to day, with some items remaining on the menu continuously. The article gives sample menus and shows how the rules assure greater variety, balance, and appeal.

Basic Salad. Along with the soup *du jour*, why not feature a salad *du jour?* With the convertible salad plan, you can offer a different hearty entrée type salad each day. The convertible salad plan makes convenient use of left-over fresh vegetables, as well as frequently discarded trim portions of many vegetables. And, while similarities of ingredients make the salads practical in preparation, each variation appears attractively different to the customer. The basic greens used are: iceberg lettuce, romaine, chicory and escarole. Left-overs and fresh ingredients are marinated overnight, combined with dressing and lettuce. Many delicious salad recipes are given.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 24, March, 1958

*Snack bar in $20 million building. J. C. Langstaff.—p. 50.

Student Snack Bar. The University of Pittsburgh's recently completed $20 million building called the Schools of Health Professions provides a 24-ft.-long stand-up snack bar for students. The bar and surrounding area which holds tables and chairs for about 160 persons, are currently being used by students as a cafeteria, until cafeteria facilities which are completed, are operating. The bar is operated by a full-time manager with previous experience, a counter boy, and four counter-girls, one of whom is part time. Hours are from 7:30 a.m. to 4 p.m. The bar is open daily except Saturday and Sunday and is not open during any evening. Full paper service is provided, and customers are encouraged to bus their own service. Prices are held to a minimum and, in many cases, are lower than outside prices. Snacks served are: sodas, sundaes, milk shakes, crackers, doughnuts, soft beverages, coffee, limited cold sandwiches, toasted cheese sandwiches, hot dogs, and hamburgers.

DINER DRIVE-IN

Vol. 17, March, 1958

*How to broil a steak. D. E. Lundberg.—p. 32.

*What about your washrooms?—p. 34.

Broiling Steak. To broil a delicious steak, start with choice meat, well marbled with fat and full of natural juices. Use a dip to suit your clientele. Dip both sides of the steak in the flavoring mix; then it is ready for the broiler. Broilers should have some means of providing for two-heat operation—high heat to brown and low heat to finish. Place the steak on the hot broiler grid in a position where it will receive uniform heat over the entire surface. When the meat shows the desired brownness on both sides, reduce broiling temperature to finish. Turn the meat often! Juices travel in the same direction as the heat—turning reverses the flow of juices, keeps them and their flavors in the meat. Never press meat while broiling or puncture with a fork. Use a spatula or tongs to turn. Test the meat for doneness with a light finger pressure. The finished steak should be a rich brown color and striped with grill marks and served in its own juice.

Washrooms. How can a washroom be kept scrupulously clean at all times? Continuous supervision is the only way. Once-a-day cleaning is not enough. If a full-time attendant is not justified someone on the staff should visit it several times a day to prevent any accumulations of litter and see that it is in respectable condition. Next in importance to cleanliness for creating respect in any washroom is modernization. It is recommended that washrooms be re-equipped and brought-up to date every ten years.

FOOD ENGINEERING

Vol. 30, March, 1958

*Supervisor training is no. 1! A. L. Bechtold.—p. 54.

*How lysine ups protein value of cereal foods. C. Feldberg and C. P. Hetzel.—p. 110.

Supervisor Training. Supervisor training has paid off for a southern manufacture and food processor. In an interview with the personnel director, the results of the training program were discussed. The program has uncovered much top talent. It has boosted morale among regular employees. Line management and supervisors are behind it. Absenteeism and turnover have been significantly cut. The example of other companies and the local community has been salutary. Employees have been upgraded. Employee attitudes have improved organization performance. The company spends about $125 per person in the program. In his initial three years, the trainee is assigned for varying lengths of time to different departments. After that, he is given a chance to select the depart-

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ment he's most interested in and best suited for—the department in which he wants additional information and training.

Lysine. Processors are boosting the protein quality of many cereal products by direct addition of lysine, one of the essential amino acids. Wheat-base foods, in particular, are now being converted to sources of high-quality proteins—comparable (but not yet equal) to those of milk, eggs, and meat. The use of lysine in wheat products has created an opportunity for creative merchandising and greater sales. Some of the improvements in protein utilization of different products are cited. Natural rice protein may be greatly improved by adding 0.2 per cent L-lysine and 0.12 per cent L-threonine. In rat-feeding experiments with polished rice, these amino acid levels produced three times the growth response of the unfortified diet. Lysine alone can improve the protein of rye bread, upping the quality 21 per cent when 0.166 per cent is added. In comparison, supplements of up to 5 per cent nonfat milk solids produced only a 9 per cent gain. If white bread is supplemented with lysine, only five slices are required to provide the protein value of one egg, while nine slices of unfortified bread are needed to supply equal protein value.

HOSPITAL MANAGEMENT

Vol. 85, April, 1958

*A colorful salad for your spring buffet.—p. 100.

Spring Salad. Hospitals can use the convenience and elegance of the buffet service for board meetings, staff entertaining, and Sunday or holiday meals for ambulatory patients. Two-toned turkey aspic salad, the recipe for which is given here, provides the perfect center-of-attraction for such a buffet, when presented whole on a platter. Or, it may be cut into squares or diamonds for simple salads or molded individually for fancier salads or garnishes. The turkey layer is made by the use of creamy evaporated milk. The top layer of the aspic is an attractive and colorful tomato red. All ingredients are available in every kitchen.

HOSPITAL TOPICS

Vol. 36, March, 1958

*Organization of hospital dietary service. J. H. Gorby.—p. 43.

Hospital Dietary Service. This article gives the simplified principles of the operation of the hospital dietary service. The work is divided into four categories: menu planning, food purchasing, food preparation, and food distribution to patients, staff, and employees. The secondary function of the department is education, including training of dietary employees, instruction of interns and nurses in general dietetic principles, and instruction of patients in proper dietary habits. Organization around these ends is considered in detail for general internal operation and department staff control, the kitchen, job assignments, and work load. Food distribution, dietary layout, type of service, food cost control, prices, purchasing procedures, portion and waste control, and menu planning are considered briefly from the standpoint of the organization of each as a department function.

HOSPITALS

Vol. 32, March 16, 1958

Easter tray favors and desserts. E. G. Upjohn.—p. 93.

Vol. 32, April 1, 1958

*Double selection doubles patient satisfaction. Sister M. Alma.—p. 75.

Selective Menu. A selective menu and other changes in procedure have brought about a 15 per cent reduction in raw food cost per meal in one hospital. Patients have also expressed more satisfaction with the dietary service when given added choices. The selective menu provides choices for general, soft, bland, low-sodium, low-fat, high-protein, and high-carbohydrate diets. Menu writing for all of these diets was simplified by preparing a master menu sheet to be filled out daily with the items to be offered. Color keying of modified diet menus insures that the correct menus are received by the different patients. A choice of serving size is also offered on the menu, and this has further reduced plate waste and increased patient satisfaction. For patients who do not complete a menu form, the dietitian selects the food. One office girl is employed to count the daily menus and prepare the work sheets which list all items offered for each meal with columns for totaling of servings needed.

INPLANT FOOD MANAGEMENT

Vol. 5, March, 1958

*Dietitians—what to do about the shortage. L. H. Kotschevar.—p. 56.

Shortage of Dietitians. Because of the need for a high-caliber type of management in industrial food operations, many companies are turning to the dietitian. These operators claim the dietitian's abilities as a manager are superior to those of the steward or non-professional person. They are far-sighted operators who are taking advantage of the dietitian's superior professional training. They should serve as an example of astute management that sees where value lies. Others in business should also consider the real qualifications of the dietitian. Her education and training are such that when she is hired to work in an industrial operation, management should realize that it is not employing a person specifically trained to work in its operation, but a professionally adaptable person. Internships in commercial operations should be increased so that greater opportunity for this type of specific training can be given to dietitians who will work later in this field. The dietitian can bring much to the management end of the industrial feeding operation. It is up to those in the field to encourage dietitians to enter their services and to institute recruiting programs to help stop the enrollment drop of dietetics majors in the colleges and universities.

INSTITUTIONS

Vol. 42, April, 1958

*Training employees for safety. E. F. Ahern.—p. 7.

*Army underwrites training for dietitians.—p. 24.

*Eliminating hidden operating costs. G. C. Weaver.—p. 36.

*How to analyze insurance requirements. R. L. Berry.—p. 50.

*How to prepare pork specialties. A. Macfarlane.—p. 93.

*How to cook pork.—p. 97.

Sanitation for food service workers. T. M. Richardson.—p. 123.

Safety Training. Create a favorable employee attitude toward safety by regularly informing employees of the accidents occurring in the organization. Schedule monthly meetings held either by the safety director or by the supervisor. Bring the actual facts and consequences of accidents to workers' attention. Dramatize accidents and their consequences in repeated attempts to break down any possible indifference or resentment to safety, through posters and other advertising. The vital factor of enthusiasm can best be created by the earnestness and personality of the person in charge of the program. Train workers to know the unsafe acts in his particular job which can cause accidents; the unsafe conditions of "known hazards"; to whom to report unsafe conditions; and where to report accidents to get first aid or medical attention. Distribute specific, printed safety regulations and rules. Teach physical dexterity in the mechanics of the worker's job. This type of training in skills can be made easier for the immediate job supervisor if he describes the operation to the worker and then demonstrates each of its steps. The supervisor should test the worker and follow up periodically to see whether the employee has understood and mastered the skills involved.

Army Training for Dietitians. A combination of student program and internship under the sponsorship of the Army is now offered to assist and encourage the qualified student in home economics who is majoring in food and nutrition or institutional management with a view to becoming a qualified dietitian. After completion of either the sophomore or junior year, the student may now enlist in the Women's Army Corps and receive an enlisted personnel's salary during the remaining years of education. On graduation, the student may apply for a commission as a second lieutenant in the Army Medical Specialist Corps Reserve. She then takes her twelve-month internship. When the internship is completed she enters the food

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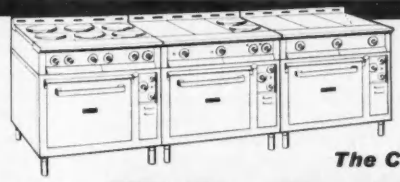

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Eliminating Hidden Costs. Omissions in service can be reflected in hidden losses. When a patron is prepared to pay one dollar for food but buys only 75 cents' worth due to poor service and bad impressions, the reason is a hidden one. Omissions in service can be corrected by good training programs. The cost of labor turnover is usually well hidden, but it can amount to an eyebrow-raising sum. Incorrect supervision of workers, low pay, and bad employee working conditions usually contribute to hidden costs in this area. The losses accruing from mediocre food are tremendous. Controls that assure continuity of the service and the food and beverage policy will eliminate these losses. Other hidden costs reveal themselves in dish and china ceiving methods and handling procedures.

How to Analyze Insurance Requirements. There are some risks of such a minor nature that the managing executive may conclude he can afford to carry them himself, but there are others, such as public liability, embezzlement, business interruption, and losses arising from fire, windstorm, and explosion, which might conceivably ruin or cripple the establishment if not covered by insurance. A competent insurance adviser will review and analyze these and other hazards and recommend which ones should be underwritten and for what amounts. After insurance has been selected and policies written, annual reports should be submitted by an appraisal organization so that the insurance can be kept abreast of changing times. Thus, a proper appraisal is one compiled in such a systematic and detailed manner that it may be readily supported in the event of a loss and thereby pave the way for a prompt and equitable settlement. The insurance problems of any institution are so complex that their treatment requires specialized knowledge—the specialized knowledge of an insurance manager or outside consultant. To measure the value of the plant, an outside appraisal service should be employed on a continuing basis.

Pork Specialties. Since practically all pork on the market comes from young hogs, pork cuts are fairly uniform in quality. The official grades are: U.S. Grade No. 1, 2, and 3. Packers grade pork on the basis of quality, conformation, proportion of fat to lean, and weight. Pork from government-inspected plants is stamped "U.S. Inspected and Passed." The lean of high quality fresh pork is a light, grayish-pink color, mottled with fat. Both flesh and fat are firm. The bones are soft with a slight tinge of red. Pork cuts today are leaner. The breeding of a new meat-type hog characterized by high muscular development which yields pork cuts with a high proportion of lean to fat is the producer's answer to the demand for these leaner cuts. Forms of pork include: regular, short-cut hams; regular, long-cut hams; skinned hams; tender hams; tender-cooked hams; picnic hams; Smithfield hams; smoked shoulder butt; Boston butt; pork loin; bacon; fancy bacon; spareribs; fat-backs; jowels; and tenderloin. The conventional method of buying the whole carcass has been supplemented by purchasing wholesale cuts, and in more recent times by fabricated and portion-ready cuts. Specifications —cut, grade, weight, depth of fat covering and trim—should always be used in buying. Pork must be handled very carefully: keep refrigerated at temperatures ranging from 33°F., to 38°F. Hold frozen pork at 0°F., or −10°F., if for a long time. Hams today must also be kept refrigerated at all times. Refrigerate in wrappers. Refrigerate large canned hams; small canned hams may be kept on the shelf.

Cooking Pork. Cook all pork to the well-done stage. Flesh should be a greyish-white with *no* trace of pink. Roast at low temperatures from 350° F.; cured cuts should be roasted at 300°F. Pork chops, steaks, and cutlets require long, slow cooking in moist heat to be at their flavor best. First brown in hot fat, then add liquid and cover. Use a small amount of water or meat broth, tomato juice or canned tomatoes, milk, sour cream, barbecue sauce, or fruit juice in braising; add liquid only a little at a time. Start bacon in a cold skillet and heat slowly. Drain fat as it cooks. When baking, place bacon in shallow pan and cook at 400°F. for about 10 min. No turning is necessary. Bake, broil, or simmer spareribs, and use low heat over a long period of time. Time tables for cooking fresh pork and cured pork are given.

THE MODERN HOSPITAL

Vol. 90, April, 1958

*You know what you mean—but who else does? S. G. Hill.—p. 51.

*We can't hire employees ready-made. J. Shaffer.—p. 96.

*Administrators have a vested interest in recruitment of qualified dietitians.—p. 102.

Communications. This article deals not with the means of communication but with the general principles on which communications should be based. The primary division of communications is between verbal and written forms. Written communications tend to be slower and narrower than verbal communications, but in general much less misunderstanding flows from them, and they are permanent records which do not depend on memory for clarity. However, verbal communications are valuable because informal, and they provide scope for amplification and discussion. Communication breaks down into various purposes of administrative significance: to give or request informa-

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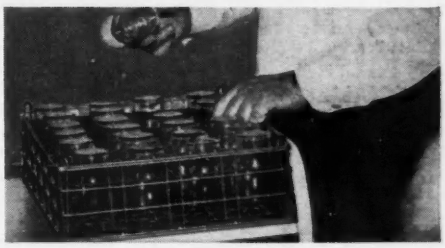

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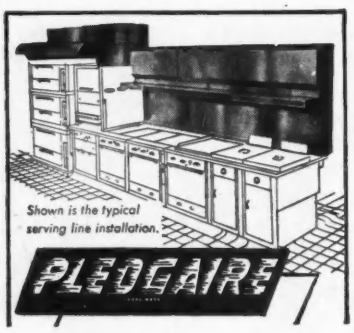

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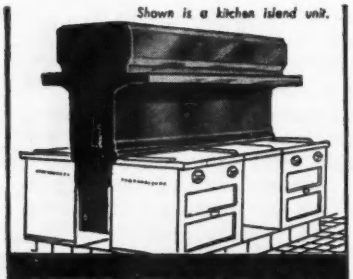

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tion; to give or request instructions; to give or request opinion and advice. The rules governing the correct use of communications concerned with these purposes are discussed thoroughly in this article. The main consideration in communicating is clarity; all rules given point to this end.

Training Employees. A good training program can break up bottlenecks, reduce turnover, raise morale, increase efficiency and production, prepare employees for promotion, make supervisors better job instructors, reduce spoilage and waste, and reduce accidents. Training can be accomplished by an in-service training dietitian whose responsibility will include the orientation of new employees, daily classes with employees, work simplification projects, time-and-motion studies, and a variety of special assignments. When a supervising dietitian has a personnel problem that needs special study or has an employee with faulty work habits, she calls the training dietitian to help her study the problem and decide on a course of action. It has been found that an in-the-department training person is more valuable and produces more effective improvement than a training person for the institution as a whole. Actual teaching on the job consists of preparation, presentation and demonstration of the facts, coaching the actual performance of the trainee, and follow-up. No matter what kind of a training program is instituted, these educational steps should be used with new employees, and friendly and fair human relations should be cultivated at all times.

Recruiting Dietitians. Several administrators discuss the reasons hospital administrators have a special interest in recruiting qualified women into dietetics and dietitians into hospital careers. Effective recruiting techniques used by these administrators are given here: hospital-week programs to reach the public, women's auxiliary programs in high schools, distribution of A.D.A. descriptive literature, tours of the hospital dietary department, and hospital recognition of the importance of the dietitian's job.

NRA NEWS

Vol. 1, April, 1958

*What is management? T. Elliott.—p.16.

*Ruffley speaking on progressive vegetable cookery. J. J. Ruffley.—p. 19.

Management. Management consists of five basic functions in the restaurant industry: planning, organizing, coordinating, directing, and controlling the best possible use of men, money, materials, methods, and machines, in order to accomplish customer and employee satisfaction and a stable profit situation for ownership. A big part of management is forecasting and planning what, how, and when something should be done and who should do it as well as why and where it should be done. The manager requires specialized qualifications and preparation for his job, and he must be equipped with certain basic philosophies and attitudes which have a direct bearing on management competence and performance.

Progressive Vegetable Cookery. Progressive vegetable cookery is the cooking of portions or small batches of the total vegetable requirement to coincide with actual serving. It insures that freshly cooked food will be served to the consumer by avoiding long holding periods and the resulting loss of flavor, color, texture, and nutritive value. Ways to insure the success of a progressive vegetable-cooking program are summed up in the following rules: Cook vegetables only until crisp-tender. Keep an even flow of freshly cooked batches scheduled so that a fresh serving tray of approximately twenty-five servings is ready for the serving line just as one is depleted. Fix definite responsibility for vegetable cookery on one person. Avoid mixing vegetables at the steam table. Make timely use of whatever equipment is available. Take pride in what is produced. The following methods of preparing vegetables will be of help in improving acceptability: creamed; au gratin; cheese sauce; Creole; hollandaise; and combination vegetables.

RESTAURANT MANAGEMENT

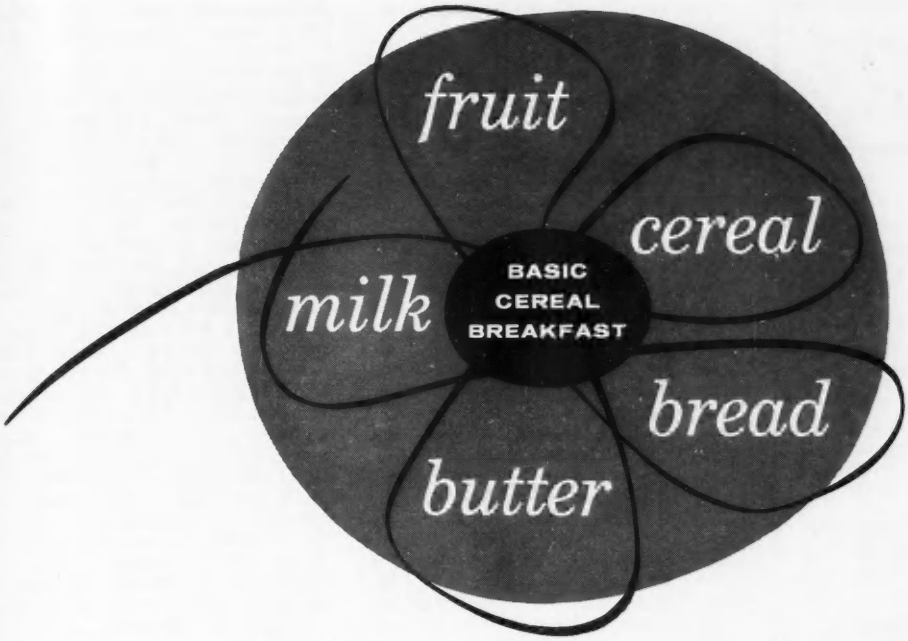
Vol. 82, March, 1958

*High protein meals at lower cost. A Easton. —p. 50.

*Putting a ceiling on noise. L. F. Yerges.—p. 65.

High Protein for Little Cost. As entrées or supplements, cheese and egg dishes are excellent sources of protein. Some entrées that provide low-cost meals are: creamed ham with cheese potato puffs; noodle and cheese loaf served with meat balls and tomato sauce with green beans; cheese and ham soufflé with tomato sauce, green peas, and pineapple; pizza; cheese omelet and asparagus spears with buttered crumbs; and deviled eggs on toast with cheese sauce. Recipes for egg pancake or omelet with diced bacon and cheese sauce, and egg-tuna puffs are given.

Noise. In recent years the design possibilities of acoustical materials have improved so much that they are now considered a prime decorating product as well as a practical aid to efficiency and profits. Acoustical tiles usually fall into four basic categories: cellulose fiber, mineral fiber, perforated asbestos board, and perforated metal panel with acoustical pad backing. Cellulose fiber is most widely used and is considered the most attractive. Metal panels are most durable and efficient. Mineral fiber and perforated asbestos board are non-combustible, and the latter is moisture resistant. Acoustical materials may be cemented, nailed, stapled, or suspended mechanically. They are best cleaned by vacuuming and should always be cleaned before painting with a good, flat interior paint.



what is a well-balanced *low-fat* quick and lasting energy breakfast?

What is meant by "Quick and Lasting Energy"? It is a prompt "lift" due to a quick rise in blood sugar—a lasting "lift" due to the fact that the blood sugar remains up and falls only gradually during the late morning hours.

The Iowa Breakfast Studies demonstrated that a basic cereal and milk breakfast as shown below provided quick and lasting energy. This basic breakfast is *low in fat* and makes a well-balanced contribution of the essential nutrients.

basic cereal low-fat breakfast pattern

Orange juice, fresh, ½ cup,
Cereal, dry weight, 1 oz.,
with whole milk, ½ cup, and sugar, 1 tsp.,
Bread, white, 2 slices, with butter, 1 tsp.,
Milk, nonfat (skim), 1 cup,
black coffee

Nutritive value of basic cereal breakfast pattern

CALORIES	502	VITAMIN A	600 I.U.
PROTEIN	20.5 gm.	THIAMINE	0.46 mg.
FAT	11.6 gm.	RIBOFLAVIN	0.80 mg.
CARBOHYDRATE	80.7 gm.	NIACIN	3.0 mg.
CALCIUM	0.532 gm.	ASCORBIC ACID	65.5 mg.
IRON	2.7 mg.	CHOLESTEROL	32.9 mg.

Note: To further reduce fat and cholesterol use skim milk on cereal which reduces Fat Total to 7.0 gm. and Cholesterol Total to 16.8 mg. Preserves or honey as spread further reduces Fat and Cholesterol.

Bowes, A. deP., and Church, C. F.: Food Values of Portions Commonly Used. 8th ed. Philadelphia: A. deP. Bowes, 1956.
Cereal Institute, Inc.: The Nutritional Contribution of Breakfast Cereals. Chicago: Cereal Institute, Inc., 1956.
Hayes, O. B., and Rose, G. K.: Supplementary Food Composition Table. J. Am. Dietet. A. 33:26, 1957.
Cereal Institute, Inc.: A Summary of the Iowa Breakfast Studies. Chicago: Cereal Institute, Inc., 1957.

CEREAL INSTITUTE, INC. 135 South LaSalle Street, Chicago 3
A research and educational endeavor devoted to the betterment of national nutrition

128 HAPPY EATERS

The next time you're thinking of what to serve for dessert —why not try *Jullicum*? *Jullicum* combines smoothly and thoroughly with milk to create custard desserts and flavored milk drinks that are so nutritious, good tasting, easy to prepare, and economical, too!

Nutritious because *Jullicum* contains rennet enzyme action which aids the digestion of milk. It makes the perfect dessert for kids from 1 to 100.

Good tasting because *Jullicum* comes in a variety of flavors that appeal to the most finnicky taste:

Vanilla	Black Raspberry
Coffee	Lime
Strawberry	Almond
Orange	Caramel
Lemon	Peppermint

Easy to prepare because *Jullicum* is liquid—no waiting for lazy powders to dissolve.

And *Jullicum* is so economical! A pint bottle costs only $1.50 and makes 128 full 4 ounce custard servings. About a penny a serving.

So from each bottle of *Jullicum* you'll get 128 happy eaters. Why not order a case today? A 6 pint case is economically priced at $8.00 ($9.00 west of the Mississippi) express prepaid. For your convenience use the handy order form below.

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5717 Christian Street
Philadelphia 43, Pa.

Gentlemen:
Please send me ____ cases of Jullicum. Enclosed is my check or money order for $_____.

I would like the following flavors:

_____

_____

Print Name .....

Hospital, School, or Institution .....

Address .....

City ..... State .....

SCHOOL LUNCH JOURNAL

Vol. 12, February, 1958

*Army radiation experiments may change food preservation. H. F. Kraybill.—p. 28.

Vol. 12, March, 1958

*Providing leadership for school lunch. E. N. Todhunter.—p. 15.

Food Radiation Experiments. There has been no evidence of toxic effects from consumption of irradiated foods in tests conducted on human beings by the Army. Although results of the tests are not yet necessarily conclusive, they do show: (a) there is no consistent pattern as to acceptability of irradiated foods over unirradiated foods; and (b) although the destruction of vitamins by ionizing radiation may appear quite significant, it is felt that the vitamin loss is no greater than that experienced during heat treatment of foods. In several foods, radiation processing is less destructive than thermal processing. The Army Medical Nutrition Laboratory tested forty foods on volunteers in the last two years. Diets in which the irradiated foods furnished 35, 65, 80, and 100 per cent of the total caloric intake were fed daily to ten volunteers for periods as long as fifteen days. From these experiments, information was received as to digestibility, acceptability, and possible toxicity. The accumulating information on irradiated foods points the way to eventual feasibility of the process.

Providing School Lunch Leadership. There is much to do yet in acquainting the public, the whole community, parents, educators, principals, teachers, and school boards with the importance of school food service and the contribution it makes to the child's welfare. School lunch programs must be basically designed to provide for improved health of children. School lunch people must work to know more than they do at present about how to get children to want to eat vegetables, fruits, eggs, and milk. Psychology and anthropology must become the working tools of nutritionists and of all those who work in school lunch programs. From these sciences, knowledge of cultures and patterns of living and appreciation of regional and home differences are disclosed. The school has a responsibility for teaching the child about his own physical health and well-being and how to maintain it through the food he eats. That is why more nutrition education programs must be created and established in the schools. School lunch workers need to be recognized as teachers as well as providers of food. Better trained people are needed to manage the huge expenditures of money that go into school lunch programs. The responsibility and the challenge for these people goes directly to the home economics groups at the colleges and universities.

VOLUME FEEDING MANAGEMENT

Vol. 10, March, 1958

*Bolster profit with pasta. E. Blair.—p. 10.

*Put your records to work.—p. 14.

*March recipes . . . with a breath of spring. —p. 22.

*Choose the brush to fit the job.—p. 46.

Low-Cost Pasta for Profit. The macaroni family provides the basis for creating a host of distinctive meatless entrées since they respond readily to inventive seasoning changes and mingle and blend easily with other foods. Through combinations with cheese, eggs, seafood, and vegetables, the possibilities for variety are endless. And, macaroni products come in an amazing number of shapes and sizes—over 100 altogether. Acquaintance with the more fanciful shapes can be profitable: the variety they offer; their eye appeal and texture interest; and their unusualness and comment-value cause interest. Common macaroni dishes make fresh menu-features when these unusual shapes and styles of pasta are used. Don't overcook pasta; macaroni which is to be baked needs less cooking than pasta which is to be sauced and served at once. Cook uncovered, in plenty of boiling salted water. Keep water boiling briskly throughout the cooking period and stir occasionally to prevent sticking. Stop cooking at the just-tender point when the pasta retains a slight chewiness. Serve pasta casseroles in distinctive, individual dishes for added sales appeal.

Working Records. Good records are required to keep track of true income. They are needed to reduce taxes and to avoid penalties, and they help to exercise better internal control. A running chart of the ratios of gross sales, advertising, food costs, bad debts, salaries, and wages over a period of years can expose any particular costs which are out of line or which show undue variations from year to year. For purposes of income tax reporting, you can call in professional auditors to check the accuracy and completeness of records or you can account for them yourself using basic accounting practices, i.e., deposit all receipts in a special place, establish a petty cash fund for small expenses, make all disbursements to vendors by check, don't issue checks for cash unless personal, and reconcile bank statements monthly. Keep a double-entry set of books which provides data on income and expenses and other information relative to assets and liabilities. Classify expenditures such as purchases, supplies, equipment, repair and maintenance, and so on. Get technical advice on the best type of records to keep on your business.

Recipes. Eight recipes with a flavor of freshness and spring about them are given here. They include instructions for preparing tuna chop suey, lemon chiffon pie, flamingo salad, sour cream dressing, orange almond rice cream, prune bread, orange biscuit rolls, and corn oysters.

Correct Brushes. A brush should be large enough to cover a surface with a minimum number of strokes. Yet it

For quantity cooking, baking ...even whipping...and no special recipes needed!

New from Carnation... a milk discovery that cuts costs up to 50% ...maintains highest quality recipe results!

The secret is Carnation Instant and a new Self-Enriched Formulation Plan. Now it's easy to make a new kind of milk product – a higher solids nonfat milk that is 20% richer than ordinary nonfat or skim milk. Moreover, a Portion Control Package makes it even easier. Simply add 1 lb. of Carnation Instant to enough water to make 1 gallon of finished product.

No special recipes needed. Carnation's crystal form dissolves instantly...never settles out...never lumps. Always ready for use in your *regular* recipes.

Thousands of restaurants and institutions have already *proved* that the new Carnation Instant Self-Enriched Formulation Plan cuts milk costs up to one-half and maintains quality recipe results. Rush coupon below for full details.

Look at These Comparisons!

Comparison of Solids in 3 Forms of Milk

	New Carnation Instant Self-Enriched Formulation	Fresh Skim Milk	Fresh Whole Milk
Nonfat Solids	11.7%	9.0%	9.0%
Fat Solids	.09%	.075%	3.5%
Total Solids	11.79%	9.075%	12.5%

Available in Portion-Control (6) 5-Lb. Bags,
Convenient 25-Lb. Box and Economy 50-Lb. Sizes

For more detailed information on this amazing nonfat milk formulation, mail this handy coupon today!

Carnation Co., Dept. KT-68, 5045 Wilshire Blvd., Los Angeles 36, Calif.

I would like more information on the new Carnation Instant Nonfat Dry Milk Self-Enriched Formulation Plan.

Name_____
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Institution or restaurant_____ Position_____

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City_____ Zone____ State_____

Right now we (do) (do not) use nonfat dry milk in recipes.
(Please check one.)

should be small enough to handle easily and to reach into difficult corners. The shape of the brush should be suited to the cleaning job. Brushes meant for cleaning smooth surfaces should not be used on rough surfaces and vice versa. Animal-fiber brushes are effective where a clean sweep, rather than friction is necessary. Animal fiber does not stand up well when wet. Vegetable-fiber brushes are relatively resistant to water logging, but will become soft under continued soaking. Palmetto is the most durable of the vegetable fiber brushes. Nylon brushes are non-absorbent and stand up well under ordinary conditions of use. They can be boiled without injury, and although they are usually more expensive than animal- or vegetable-fiber brushes, they last longer.

WHAT'S NEW IN HOME ECONOMICS

Vol. 22, April, 1958

*Modern ways with meat, poultry, fish.—p. 28.

*Modern ways with eggs, cheese, legumes.—p. 31.

Meat, Poultry, Fish. Today's cooking of roast meats involves the use of low-temperature roasting in an open pan and a meat thermometer for determining the desired state of doneness. Today, lamb may be served rare or medium rare, bacon can be baked instead of fried, and herbs are finding increased use in meat cookery. Processed, precooked, and frozen meats are prepared with meticulous attention to label instructions. Meat recipes still emphasize the taste appeal and meal appeal of steaks, chops, roasts, and hamburger but are stimulating creative experience with barbecues, kabobs, and chafing-dish foods. The modern way with turkeys, chickens, ducks, geese, rock Cornish hens, and other fowl is to select the best form, style, or size of bird, marketed in ready-to-cook form. More and more ready-prepared fish dishes are also being used. Fresh and frozen fish, fillets and steaks, canned tuna, and canned salmon, all lend themselves to quick and easy preparation.

Eggs, Cheese, Legumes. Today eggs are cooked with careful attention to temperature and time control. Cooking is done at high temperatures for a very short time, or at the low moderate temperatures recommended for soufflés, angel food cakes, and soft meringues. The full enjoyment of cheese and cheese dishes depends largely on taste, texture, and aroma. Cheese served with crackers "as is" tastes best at room temperature. Cooked cheese in sauces and dishes tastes best when subjected to low or low-moderate oven temperatures and when served piping hot. Cheese should be stored carefully to avoid contamination of flavor from other foods. Today the homemaker makes good use of legumes processed for faster preparation—shorter soaking time (or none at all) and faster cooking time. Canned legumes and frozen bean and pea soups and canned or frozen chili dishes make good additions to the meal and can be served in minutes.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Daniel Whistler—1619–May 11, 1684

The first printed book on rickets, published in Latin at Leyden in 1645, was entitled *Inaugural Medical Disputation on the Children's Disease of the English which the inhabitants idiomatically call The Rickets.* This was the work submitted for his medical degree by Daniel Whistler and was dedicated to his brothers, Dr. John and Rudolph Whistler. It was a small monograph of fourteen pages, terse and direct in style. He stated that the disease was endemic in England, and he gave seventeen diagnostic symptoms including: swelling of the abdomen, enlargement of epiphyses of joints, general softness of the bones, enlargement of the head, retarded dentition and caries of the teeth, deformities of the thorax, and labored breathing and cough. His treatments of the disease were far less satisfactory than his diagnosis and description, but it was 1918 before Mellanby published his experimental data showing that rickets in puppies could be cured or prevented by cod-liver oil and butterfat, but not by cottonseed or olive oil. Whistler's recommendations included: "root of King's cup and crow's liver, dried in baker's oven after the bread has been taken out and then powdered are reckoned specifics."

Whistler is a controversial figure. There are those who maintain that he stole his ideas from Francis Glisson, who is rightly recognized as the author of the classic account of rickets (1650). Glisson's was a mature and scholarly study of rickets in which he distinguished between rickets and infantile scurvy. Glisson's book has been described as "one of the glories of English medicine"; however, there is no reason to believe that Whistler's work was anything but his own, especially since it was published in 1645, five years before Glisson's, the same year the committee was appointed by the College of Physicians to study rickets and out of which Glisson's work developed.

Daniel Whistler was born at Walthamstow in Essex in 1619 and obtained his B.A. degree from Merton College, Oxford, in 1642. He obtained his medical degree from Leyden in 1645 and another medical degree from Oxford in 1647. He lectured in geometry at Gresham College (1648) and was made a Fellow of the Royal College of Physicians (1649). Later (1652), he was in charge of seamen wounded in the war with Holland, and in 1653 accompanied Cromwell's ambassador on a mission in Sweden. The next year he returned to London and started medical practice. In 1656, he married Elizabeth Lowther, a widow of wealth from Essex.

Whistler became a successful and popular physician, a founder of the Royal Society, and President of the College of Physicians in 1683. Pepys and Evelyn, famous diarists, both knew and liked him and described him as a learned and witty man. He was a polished and urbane man of society and spoke French and Latin, and wrote Latin verse. He died from pneumonia on May 11, 1684.

REFERENCES: Smerdon, G. T.: Daniel Whistler and the English Disease—A Translation and Biographical Note. J. Hist. Med. 5: 397, 1950; Hess, A.: Rickets, Osteomalacia and Tetany. Philadelphia: Lea & Febiger, 1929.—*Contributed by E. Neige Todhunter, Ph.D., Dean School of Home Economics, University of Alabama, University.*

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Now one food conveyor, the new Blickman Foodveyor, has the versatility of four, thanks to Blickman's exclusive new concept of "variable capacity". Now the cold compartment can be adapted to serve any number of patients from 18 to 24. Capacity increases or decreases simply by changing sets of non-tilt tray racks. Your conveyor load is governed only by your own weekly or daily feeding requirements. And that's not all. Here are just a few of the other advantages you get with the exclusive Foodveyor:

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- *Spacious heated compartment.* Fully insulated heated compartment contains 8 easy-glide drawers with room on each for 3 nine-inch dinner plates and 3 bouillon cups. Thermostatic control keeps cooked foods oven-fresh and piping hot.
- *Stainless steel construction for lifetime service.* Foodveyor is constructed of stainless steel inside and out. Tray slides and heated drawers are fabricated of heavy gauge lightweight aluminum.

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THE AMERICAN DIETETIC ASSOCIATION

Philadelphia • October 21-24, 1958

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION October 21-24, 1958 in Philadelphia, hotels and their rates are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED *MUST* BE INCLUDED.

Hotel	Single	Double	Twin	Suites
ADELPHIA	$ 6.50 up	$ 9.00 up	$12.00 up	$25.00 up
BARCLAY	10.00	14.00 up		30.00 up
JOHN BARTRAM	4.50 up	7.50 up	9.00 up	25.00 up
BELLEVUE-STRATFORD*	8.00 up	12.00 up	12.00 up	30.00 up
BENJAMIN-FRANKLIN*	7.00 up	10.00 up	14.00 up	30.00 up
DRAKE	7.00 up	10.00 up	13.00 up	20.00 up
ESSEX	4.50 up	7.00 up	9.00 up	22.00 up
NORMANDIE	5.00 up	7.00 up	8.00 up	18.00
PENN SHERWOOD	6.00 up	10.50 up	10.50 up	15.50 up
ROBERT MORRIS	5.00 up	8.00 up	9.00 up	
ST. JAMES	4.75 up	7.00 up	7.50 up	15.00 up
SHERATON	8.50 up	13.00 up	15.00 up	30.50 up
SYLVANIA	5.50 up	9.50 up	9.50 up	20.00 up
WARWICK	11.00 up	14.00 up	14.00 up	22.00 up

(*) Headquarters hotels

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO: September 20, 1958

American Dietetic Assn. Housing Bureau
Convention & Visitors' Bureau
Penn Square Bldg., Juniper & Filbert Sts.
Philadelphia 7, Pa.

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION Convention in Philadelphia, October 21-24, 1958.

Single Room_____ Double Bedded Room_____ Twin Bedded Room_____

Other Type of Room_____

Rate: From $_____ to $_____

First Choice Hotel _____

Second Choice Hotel _____

Third Choice Hotel _____

Arriving at Hotel (date) _____ hour _____ A. M. _____ P. M. Leaving (date) _____ hour _____ A.M. _____ P.M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of *both* persons for *each* double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

_____

_____

_____

_____

(Individual Requesting Reservations)

Name _____

Address _____

City and State _____

If the hotels of your choice are unable to accept your reservation the Housing Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been assigned.

About Your Annual Meeting—October 21-24

Philadelphia—Twixt the Schuylkill and the Delaware

A WEEK IN BERMUDA—AN ALL-EXPENSE VACATION.

In just three hours' flying time from New York you can find yourself in the British colony of Bermuda, a coral cluster of more than 150 islands.

Listening to the klop klop of horses' hooves, riding in a surrey, or darting about in a little English taxi, you will quickly orient yourself to a small piece of the Queen's Empire. You will hear familiar-sounding names, such as Southampton, Warwick, Devonshire, and Paget, which were clung to and reused by homesick early settlers.

Sometime during the week between October 25 and 31, you will be escorted on a tour of Harrington Sound, visiting the famous Leamington and Crystal Caves, the Aquarium, Devil's Hole, and the Lili Perfume factory. Another excursion, an all-day yacht cruise, will take you around Hamilton Harbour and among the islands of the Great Sound to Somerset. You will land on one of the coral islands to swim and have a leisurely barbecue lunch, listening to a calypso singer.

Beaches are truly pink, colored by coral ground fine by the sea. Along the South Shore, there are long stretches of sand and innumerable coves protected by the encircling reefs which break the force of the waves—perfect for swimming.

If golf, tennis, deep-sea fishing, or water skiing appeal to you, you will have ample opportunity to enjoy these sports in beautiful balmy weather. But do take a breather to return to your hotel, the Bermudiana, for afternoon tea, an enduring custom which reminds one of the tie with England.

Your sightseeing should include a leisurely visit to St. George's, a community which clings to its seventeenth century heritage. There your English taxi will inch through picturesque, narrow alleys, allowing you to see the pastel-hued houses with their white roofs fashioned into shallow steps to catch the precious rain water.

You will, of course, gravitate to Front Street, which edges the harbor and is the main thoroughfare of Hamilton. Strolling under balconies, you will visit shops which are stocked with the products for which England is famous. Although their prices are reputedly 25 to 50 per cent lower than they are in this country, shoppers will be rewarded for comparing quality as well as cost.

TENTATIVE ITINERARY

Friday, Oct. 24—Leave Philadelphia via motor. Arrive New York City hotel, where overnight accommodations are furnished (no meals).

Saturday, Oct. 25—Transfer to airport via motor. 10:30 a.m., leave New York via Pan American Airways. 2:30 p.m., arrive Bermuda. Transfer to Hotel Bermudiana where twin-bedded room accommodations are furnished on modified American plan basis (includes breakfast and dinner) for six nights. Fine swimming pool.

Friday, Oct. 31—Transfer from hotel to airport. 3:00 p.m., leave Bermuda via Pan American Airways; 5:15 p.m., arrive New York.

Cost of land portion.....$138.65
Cost of round trip air fare..... 99.00

Total all-expense fare.....$237.65

Included in above cost: motor from Philadelphia to New York, gratuities for baggage to hotel rooms, New York City and Bermuda, in and out; Hotel Bermudiana with meals daily as outlined, modified American plan; transfers of passengers and luggage, arrival and departure Bermuda; yacht cruise in Bermuda, half-day tour of the Island, including admissions; overnight hotel in New York City; round-trip air fare New York to Bermuda.

Reservations for this trip may be made with Charles Kirk, Pan American World Airways, 30 South Michigan Avenue, Chicago, Illinois.

Reminders

Headquarters hotels: Benjamin Franklin and Bellevue-Stratford
Hotel reservation form: see page 664.
A.D.A. group meetings: see April JOURNAL "News Notes"
Alumnae meals information: see May JOURNAL "News Notes"
Annual banquet: Thursday evening

GREETING TIME

As one of the forty-one generations (annual determination) of A.D.A. members, you are invited to meet your friends, among whom our exhibitors are included, on the eve of the Annual Meeting, October 20, at the Benjamin Franklin Hotel.

In anticipation of the event, the ballroom and additional space nearby have been reserved. Each of the smaller rooms will have a designation, such as "Community Nutrition," "Food Administration," and so on, so that you may find your friends in the area of their interest, or cruising about, as you may find yourself doing. Light refreshments will be served in each gathering place.

At a specified time during the evening, to be announced later, you will view a production comprised of a series of vignettes which honor persons and events in the forty-one years of the Association's life.

You will cherish the few moments given to you to live in imagination with the members who gave, without self-consideration, their best toward the forming and development of this organization.

Everyone is asked to come—all members, all exhibitors.

PENN SKETCHES

The nation's birthplace and first citadel of high finance is, today, a sprawling industrial giant that William Penn would never recognize. The old city, the Green Countrie Towne familiar to Penn, Franklin, Morris, and Girard, is now centered east of Broad Street and a few blocks north and south of Market, the two main axes of the humming metropolis.

* * *

When, late in the autumn of 1682, Penn first arrived with his followers, he found that Thomas Holme had already laid out streets and named them for famous persons. Penn, who objected to such "man-worship," promptly gave numbers to those streets running north and south and renamed the east-west streets for trees and flowers of the vicinity. From this originated the jingle:

High, Mulberry, Sassafras, Vine;
Chestnut, Walnut, Spruce, and Pine.

* * *

The first Quakers of Green Countrie Towne lived in caves dug into the high banks of the Delaware. This was the "Holy Experiment," and, as the Quaker cave dwellers expressed it, "Better a Colonial dugout than an English dungeon; better a cave than a loathsome prison." But when the following years saw the building of about six hundred dwellings and business houses, the Quakers, growing wealthy from trade and commerce with the Colonies and the Caribbean islands, deserted their earth environs for higher ground.

* * *

Within the circle of a mere century, growth transformed Philadelphia from a comfortable place supporting 17,000 people to a formidable expanse sheltering a million and a quarter citizens. As Green Countrie Towne stretched and spread, growing pains and a swollen immigrant population set up a kind of internal emigration. Thus was created the "Main Line," with Philadelphia's oldest families leaving their distinguished residences in the "Towne" to follow the Main Line of the Pennsylvania Railroad to outlying districts. The "Main Line" (in evidence today) has long consisted of an old Republican aristocracy founded on birth, wealth, power, and culture. For the most part, the "Main Line" still generates Philadelphia's long-famed conservative atmosphere in society, politics, and civic life.

Honor for Miss Perry. A Distinguished Service Award in recognition of outstanding achievement and service in home economics was presented to Elizabeth Perry on April 25 by the School of Home Economics, Kansas State College, Manhattan. Annual presentations of these awards constitute the highlight of the Hospitality Day and open house sponsored by the School of Home Economics. Miss Perry, who is an alumna of Kansas State College, is Past-President of A.D.A. and has, since 1946, been the Chairman of the Dietary Committee of the Cleveland Hospital Council. She is Director of Hospital Service, The Stouffer Corporation, Cleveland.

Food Technologists Make Awards. At the annual meeting of the Institute of Food Technologists in Chicago in May, the 1958 Nicholas Appert Award was presented to Dr. William F. Geddes, Chief, Department of Agricultural Chemistry, University of Minnesota. Dr. Geddes' work has been concerned with the production and improvement of cereal products in the U.S. and Canada. Especially outstanding has been his work on the role of proteins, enzymes, and carbohydrates in the milling and baking properties of wheat, and on methods for the evaluation of flours. He has been editor of *Cereal Chemistry* since 1943 and is credited with more than 220 technical papers in his field. Other honors he has received have included the Coronation Medal of King George VI in 1930 and the 1950 Thomas Burr Osborne Medal of the American Association of Cereal Chemists, of which he is Past-President. The Appert Award carries an honorarium of $1000 plus a bronze medal and commemorates the work of the French inventor who discovered the process of food preservation by applying heat in sealed containers.

At the same meeting, Dr. Bernard L. Oser received the 1958 Babcock-Hart Award for his technological services to nutrition and public health. The award of $1000 is furnished by the Nutrition Foundation, Inc. Dr. Oser, who is Director and Vice-President, Food and Drug Research Laboratories, Inc., Maspeth, New York, has been especially interested in the fortification and stabilization of foods with vitamins and in the acceptability of food additives. He is currently a member of the United Nations Commission investigating protein deficiencies in underprivileged countries of the world.

***Institutions Magazine's* Food Service Contest.** Winners of the Twelfth Annual Food Service Contest conducted by *Institutions Magazine* were announced at the annual convention of the National Restaurant Association in Chicago in May.

Included in the "Merit Awards" were: Montana State University Lodge, Missoula, with Lendal H. Kotschevar, Ph.D., named as the designer (Dr. Kotschevar is Career Guidance Chairman of A.D.A. this year); and Virginia Municipal Hospital, Virginia, Minnesota, where Helen Richter is dietitian.

Recognition was also accorded another A.D.A. member in the form of an "Honor Award." This went to Mendota State Hospital, Madison, Wisconsin, where Dorothy Ridler is dietitian.

Two A.D.A. members served as "analysts" for the contest: Dr. Mary deGarmo Bryan and Alberta MacFarlane, both food service consultants in Chicago. Included in the judges were: Mildred Bonnell, Acting Head of Institution Management, University of Illinois, Urbana; and Arlene Wilson, Dietary Consultant for the Indiana Department of Health, Indianapolis.

Hospital Administrator Honored. The American Hospital Association has announced that John N. Hatfield, Director, Passavant Memorial Hospital, Chicago, has been selected as the recipient of the 1958 Distinguished Service Award of that Association. The award, highest honor conferred by the Association, is given for outstanding leadership in hospital administration. Mr. Hatfield is currently Treasurer of the American Hospital Association, and in 1949-50, served as its President. Presentation of the award will be made on August 20 at the Association's annual convention in Chicago.

Summer Workshops. Announcements continue to be received concerning summer workshops which may be of interest to dietitians.

At *Louisiana State University*, Baton Rouge, a workshop in human nutrition will be offered June 30 to July 18. Visiting instructors will include: Dr. Genevieve Stearns, College of Medicine, State University of Iowa; and Dr. Charlotte M. Young, Graduate School of Nutrition, Cornell University. Three hours' graduate credit will be given for the course. Detailed information is available from Dorothy S. Moschette, Professor of Home Economics.

A special course in school lunchroom management will be presented at *The Ohio State University*, July 7 to 23, which will earn participants 4 hours' credit. Topics to be featured include: educational contributions of the school lunch program, principles of nutrition and management as applied to lunchroom operation, personnel training, and the planning and care of physical facilities. Further information may be obtained from LeVelle Wood, Campbell Hall, The Ohio State University, Columbus 10.

Post-Doctoral Fellowship. Individuals holding doctoral degrees in medicine or one of the biologic sciences are invited to become candidates for the National Vitamin Foundation—Russell M. Wilder Fellowship. This is a three-year fellowship open to scientists interested in continuing their training in nutrition and pays the recipient $4500 the first year, $5000 the second, and $5500 the third. It becomes effective July or September 1959. Closing date for applications is September 1, 1958. Further details and application forms may be obtained from the National Vitamin Foundation, 149 East 78th Street, New York 23.

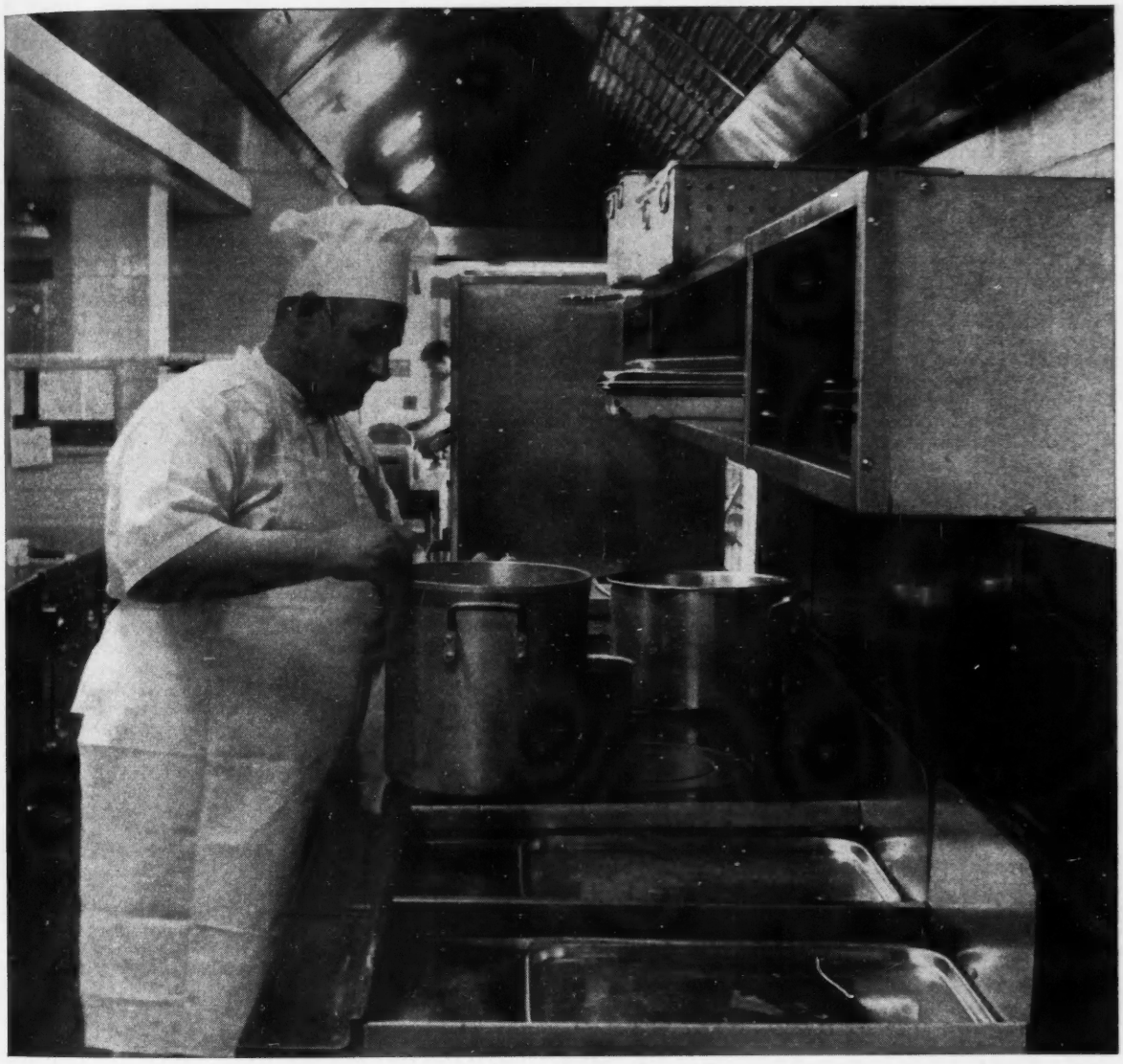
Nutrition Foundation Grants. At the annual meeting of the Board of Trustees of the Nutrition Foundation, Inc., twenty new grants totaling over $218,000 were made under the Foundation's continuing research and education program in the U.S., Canada, and Central America. New trustees elected at this meeting are: Dr. Conrad A. Elvehjem, President-Elect, University of Wisconsin; Maurice Pate, Executive Director, United Nations Children's Fund; and Kenneth H. Redmond, President, United Fruit Company.

In speaking to the trustees, Dr. Charles Glen King, Executive Director of the Foundation, stressed the fact that the abundance of high quality foods available on American markets has created a need for changed emphasis in educating the public. "Unless the consumer makes the right selections at the store and dinner table, damaging and expensive forms of malnutrition will continue or increase in the midst of plenty. Without education of the consumer, the public is easily confused and uncertain about the adequacy and safety of their food resources. Biased or irresponsible claims by faddists, unscrupulous salesmen, and others will continue to reach the public and impose serious risks to their health and burdens on their economy. Unless honest measures of education fill the need for intelligent guidance, both the public and the food industry are under a handicap."

The following is the list of foods expected to be in plentiful supply during June, as reported by the U.S.D.A.:

Milk and dairy products
Spring vegetables
Vegetable fats and oils

New Food Guide. The U.S.D.A. has developed a new daily food guide, "Food for Fitness," which is now available as a colorful leaflet. The guide suggests that the daily diet be



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based on four kinds of foods: (a) milk; (b) meat and alternates such as eggs and dry beans or peas; (c) fruits and vegetables; and (d) breads and cereals. By following this food guide, these foods can supply the nutrient needs to keep in top shape. Most people will include in their meals foods not listed in the guide, such as butter, margarine, or sugar, as well as extra items from the four main food groups. These additions will supply extra calories, as well as extra appetite appeal, to round out the well planned diet.

An 18- by 24-in. poster of the four food groups, printed in color is also available for wall display.

Single copies of both the Leaflet 424, and of the poster may be obtained on request from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

U.S.D.A. Food Survey. Report No. 12 in the U.S.D.A.'s Household Food Consumption Survey 1955 has been released under the title, *Food Production for Home Use by Households in the United States—by Region.* Fifteen tables of data are presented for the U.S. as a whole and for each of four regions. According to this survey, American farm families are raising more beef for their own use than ever before, but home production of other foods on farms has dropped. In this survey, 45 per cent of the farm families raised beef for themselves, compared with only 21 per cent in a 1941 survey. More farm families used home-raised pork than beef (50 per cent) as reported in 1954, but this is a drop from the 71 per cent reported in 1941.

This downward trend was also evident in the use of other foods. Only 40 per cent of the food (on a money-value basis) for farm families was home-produced in 1954 compared with 60 per cent in 1941. Home-churned butter was used by only 38 per cent of the farm homes in 1954, whereas 63 per cent did their own churning in 1941. The change was smallest for home-grown vegetables—94 per cent in 1941 vs. 89 per cent in 1954.

Although these farm families don't depend on home-produced food as they once did, 98 per cent did use some food they produced. Also, some town and country families who don't raise crops for sale do raise food for their own use. In 1954, three-fifths of the rural nonfarm families and one-fifth of the urban families had home-produced food. Most grew only fruit or vegetables, although some rural families also kept chickens for meat and eggs, and some raised other meat animals or kept a cow.

By region, farm families in the South used more home-produced food, and those in the West the least, except for beef.

Single copies of this report may be requested from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

New Publications. A new booklet released by the Food and Agriculture Organization of the United Nations is titled *Report of the Nutrition Committee for South and East Asia, Fourth Session — Tokyo, Japan, 25 September - 2 October, 1956.* The conference which is reported was sponsored jointly by FAO and the World Health Organization and was the fourth in a series, the others having been held in the Philippines in 1948, in Burma in 1950, and in Indonesia in 1953. Chapter headings indicate the material covered: "Nutrition and Food Production"; "The Beriberi Problem in South and East Asia"; "Improving the Nutritive Value of Rice"; "The Study and Prevention of Protein Malnutrition"; "Supplementary Feeding"; "Education in Nutrition"; and "Endemic Goiter." Copies of this forty-nine-page report may be ordered from International Documents Service, Columbia University Press, 2960 Broadway, New York 27, for 50 cents each.

Kansas Agricultural Experiment Station, Kansas State College, Manhattan, has issued a new Bulletin 395, *Preserving Foods by Freezing*, which presents new facts on freezing acquired through research at the College and summarizes previously published information. Complete with pictures, diagrams, and tables, the bulletin discusses the freezing of meat, poultry products and game, fruits and vegetables, and prepared, precooked, and cooked frozen foods. In addition to detailed and authoritative data on selection of foods for freezing and methods of freezing and wrapping, menu suggestions for serving meals from the freezer are included. Added precautions are given for the handling of precooked foods, as well as advice on determining what prepared and precooked foods are worth freezing. Copies of this bulletin may be obtained on request from the College's Distribution Center.

From the Oklahoma Agricultural Experiment Station, a copy of its new Miscellaneous Publication MP-49, *The Nutritive Value of Cooked Meat*, has been received. Authored by Ruth M. Leverton and George V. Odell, data for lean, marbled, and fat portions of cooked meat are presented. Analyses were made for: total energy value, calcium, sodium, potassium, magnesium, thiamine, riboflavin, niacin, pantothenic acid, vitamin B_6, vitamin B_{12}, moisture, ash, nitrogen, and fat. Figures on raw and cooked weights of each cut are also given, together with the weight of the lean, marble, and fat portions and of the inedible waste. In addition, percentage yields of the different cuts in terms of total cooked weight and total edible portion are presented. More than fifty cuts of meats—beef, veal, pork, lamb, and bacon—were considered in this study. Single copies may be requested from the Oklahoma Agricultural Experiment Station, Oklahoma State University, Stillwater.

Booklets for Organization Workers. Three new leadership pamphlets are now available from the Adult Education Association of the U.S.A., 743 North Wabash Avenue, Chicago 11. They are: *Effective Public Relations, Better Boards and Committees,* and *Streamlining Parliamentary Procedure.* The cost of each is 60 cents a single copy; for two, 50 cents each; and for three, 40 cents each.

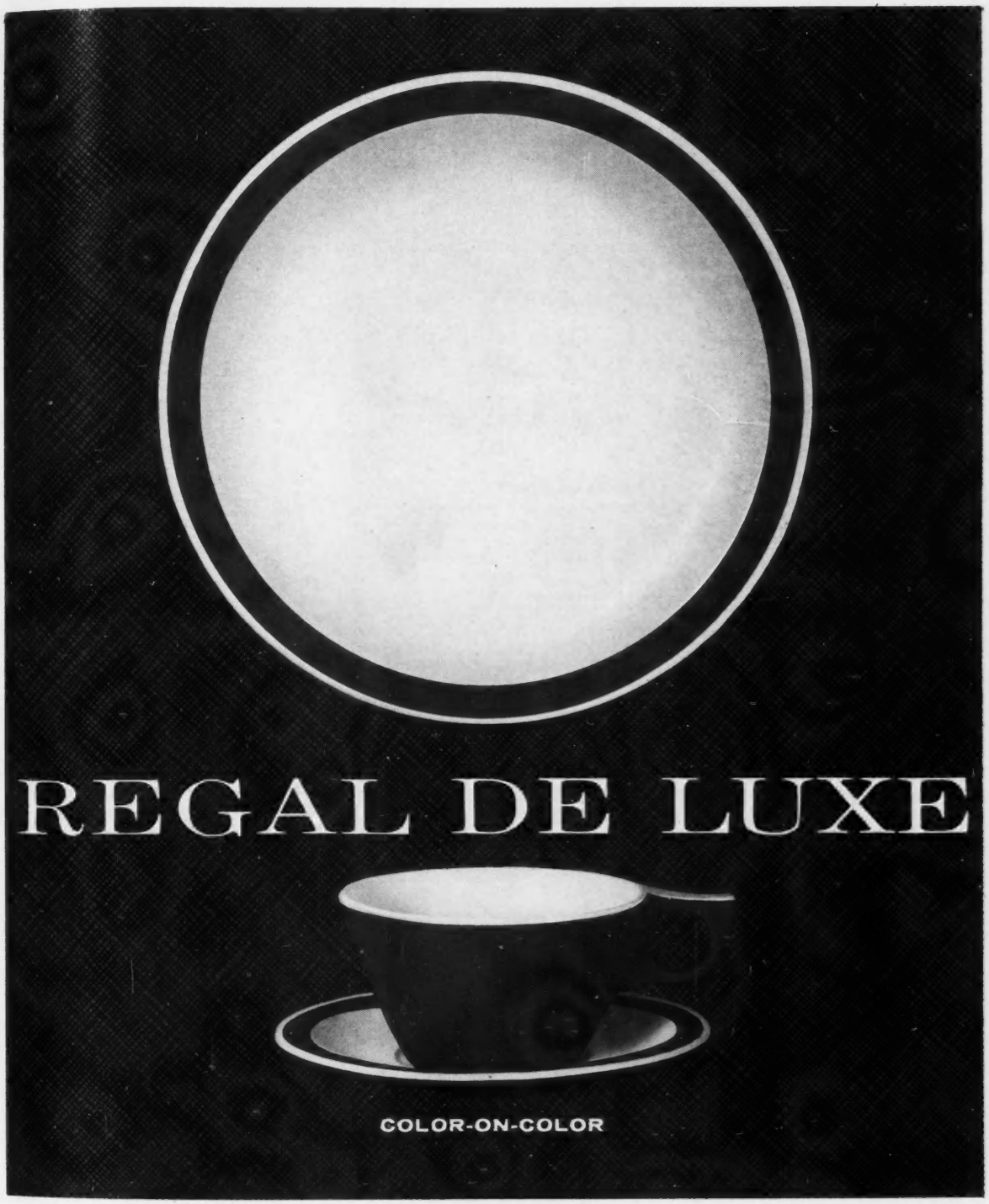
Effective Public Relations, No. 13 in the Leadership Pamphlet Series, deals with how to choose and use the tools that will interpret your programs and activities to the public; how to apply the creative approach; how to keep your lines of communication with your public open and functioning. It is a useful guide for volunteer workers and for leaders of group projects. It explains how to use the various media in establishing a well rounded public relations program.

Better Boards and Committees, which is No. 14, is a manual outlining ways to improve organization leadership. It discusses new theories regarding the roles of boards and committees and provides guides and check-lists for better functions of these groups.

Streamlining Parliamentary Procedure (No. 15 in the series) is an up-to-date guide designed to show that rules of order, if not interpreted too rigidly, can help people work together more productively. The role of the chairman is described and the basic principles of parliamentary law explained. The "seven cardinal sins" and "seven cardinal virtues" of parliamentary practice are described.

Interns Visit the Army. To celebrate the eleventh anniversary of the establishment of the Army Medical Specialist Corps on April 16, thirteen dietetic interns from the U.S. Public Health Service Hospital, Staten Island, visited the Headquarters, First U.S. Army, Governors Island. They toured the Fort Jay Hospital and Governors Island and were later entertained for supper at the Officers' Club. Dietetic interns from other hospitals in the New York area have recently enjoyed similar tours, including those from St. Luke's Hospital, New York Hospital, the Bronx VA Hospital, and Grasslands Hospital, Westchester.

School Milk Consumption. In 1955, public schools in St. Louis and Los Angeles took advantage of the Special Milk Program of the U.S.D.A. Since then, in St. Louis elementary schools, daily milk consumption has risen 50 per cent; in Los Angeles, 68 per cent. Under the Special Milk Program, milk is provided to school children at a substantially reduced price. With the introduction of this program, milk cost in St. Louis per half-pint was reduced one-half in both elementary and high schools. In Los Angeles elementary schools, it was reduced about one-third in price, in high schools about one-half.



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A complete report of this study is included in "The Special Milk Program—Its Effect on Consumption in St. Louis and Los Angeles Schools" by Kenneth E. Anderson, single copies of which are available from the U.S.D.A. Office of Information, as Marketing Research Report No. 209.

A second report on the Special Milk Program is "Participation of Schools and Pupils in the School Lunch and Special Milk Programs in March 1957—A Preliminary Report," which is AMS-206, August 1957. Of 105,966 public elementary and secondary schools in the U.S., an estimated 52,522, or 49.6 per cent participated in the national school lunch program in March 1957, according to this report. An additional 6.4 per cent offered plate lunch combinations, but did not participate in the National School Lunch Program. Approximately 22.2 million pupils, or 67.8 per cent of total national enrollment, were in participating schools. However, the average number of lunches sold was equal to only about 42 per cent of total pupil enrollment in these schools. On a national basis, it appears that only 30.5 per cent of pupils in public elementary and secondary schools participated in the National School Lunch Program, the equivalent-pupil participation being calculated at slightly under 10 million.

In respect to the Special Milk Program, an estimated 66,899, or 63.1 per cent of all elementary and secondary public schools were enrolled. Of those in the National School Lunch Program, 83.8 per cent participated also in the milk program. Of 45,477 schools without provision for lunch services, 17,353 or 38.2 per cent were in the school milk program. An estimated 409.2 million half-pints (or equivalent) of milk were sold in these schools during March 1947, and an additional 30 million half-pints were distributed free to pupils.

Southern Food Consumption. Although eating habits in the South may differ some from those of other parts of the U.S., the U.S.D.A.'s 1955 Food Consumption Survey indicates that the food dollar in the South is spent very much as it is in the rest of the country. Meat, poultry, fish, and eggs accounted for 35 cents of every food dollar; 15 cents went for milk and milk products (including butter); 19 cents for potatoes and other fruits and vegetables; 12 cents for grain products; and 19 cents for fats, sweets, beverages, and all other foods. The southern homemaker did, however, make different choices within these groups. She spent more in 1955 of her meat money for pork, and she was more likely to choose the fat cuts. Probably because she does more home baking, she spent a much larger proportion of her grain-products money for flour and meal than for purchased baked goods, and she bought much more shortening and sugar.

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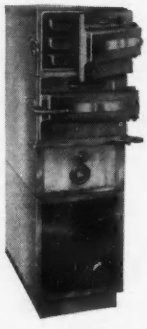

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News of State Associations

Alabama Dietetic Association. The spring meeting of the Alabama Association was held in Montgomery, April 25 and 26. The program included:

"Malaya Passport"—C. Frances MacKinnon, University of North Carolina, who also served as A.D.A.'s official representative

"Sanitation"—Paul O'Neal, Public Health Officer, Montgomery

"What Do You Do When the Soap Man Comes?" — Edward Whidden, Director of Pharmacy and Central Supply, University Hospital, Birmingham

"Human Engineering"—Dr. Thomas Staton, Commander Staff School, Maxwell Air Force Base, Montgomery

California Dietetic Association. San Francisco was the scene of the spring meeting of the California Dietetic Association held April 21 and 22 in conjunction with the Western Hospitals Association convention. A section meeting of the Hospital Association's program on April 21 featured:

"The Administrator Relies on the Dietary Department's Operation as a Portion of the Hospital Public Re-

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SOUP BASES AND SEASONINGS

lations Program — Ruth Kahn, American Hospital Association, Chicago

"Causes of Accidents—Management's Plan for Prevention"—a panel discussion

"Budgeting Positions and Post Assignments in a Food Service Department" — Jane Pirkey, Nutrition Consultant of the State of California, Sacramento

On April 22, the Dietetic Association's meeting was held, with the following program:

"Communications among Professional Groups in a Hospital" — William Griffiths, Ph.D., Director, Department of Health Education, University of California School of Public Health, Berkeley

"Life and Health in the Later Years" —Louis Kuplan, Citizens' Advisory Committee on Aging, State of California

"The Use of Low Cost Therapeutic Diet Manuals by Public Assistance Agencies" — Helen Stebbins, Home Economist, California Department of Public Welfare

"Confusion in the Diet Kitchen"— Harold C. Sox, M.D., Palo Alto Medical Clinic and Research Foundation

"A Simplified Method for Quantitative Diets" — Phyllis M. Ullman, Dietitian, Palo Alto Medical Clinic and Research Foundation

Edna Russ, Mt. Zion Hospital, San Francisco, is serving as the dietetic representative on a joint committee of the California Dietetic Association and the California Nursing League. Another recent appointment is that of Maxine Merrick, VA Hospital, San Francisco, to serve as a member of the Special Diet Committee of the California Heart Association.

Bay Region dietitians on March 12 co-sponsored with other allied medical professions a reception for high school girls in San Francisco to acquaint them with the various medical careers, including physiotherapy, occupational therapy, nursing, medical social work, and dietetics.

In *Los Angeles*, the Home Economists in Business, the local Home Economics and Dietetic Associations, and the members of the Greater Los Angeles Nutrition Council held a joint meeting in March. Speaker of the evening was Dr. Edward J. Stainbrook, Department of Psychiatry, University of Southern California School of Medicine, whose subject was "Human Relations in the Job You Do."

Colorado Dietetic Association. April 25 and 26 were the dates of the spring meeting of the Colorado, New Mexico, and Wyoming Dietetic Associations in Denver. The program opened with a dinner on Friday evening, with Harold Torgan, Denver attorney, speaking on "Legal Loopholes." The following day, the program included:

"Selection of Equipment" — a panel discussion moderated by Cora Kusner, Chief Dietitian, Colorado State Hospital, Pueblo

"What's New in the Treatment of Diabetes?"—Dr. E. Paul Sheridan, University of Colorado Medical School, Denver

"Mixes"—a talk and film by Lyman Root and Robert Milner of Pillsbury Mills, Inc.

Connecticut Dietetic Association. The spring meeting of the Connecticut Dietetic Association was held on Connecticut Home Economics Day, April 19, at the University of Connecticut, Storrs. Mildred Hearn Mead, Manager, Institutional Services, General Foods Corporation, White Plains, New York, spoke on "New Food Products." A second feature of the program was a speech by Dr. Ethel Alpenfels, anthropologist, New York University, on "This Changing World."

Illinois Dietetic Association. The April meeting of the *Chicago Dietetic Association* featured two talks: "Keeping Up to Date in the Quartermaster Corps" by Dr. Doris Calloway, Quartermaster Food and Container Institute of the Armed Forces, Chicago; and "Staphylococcus Research

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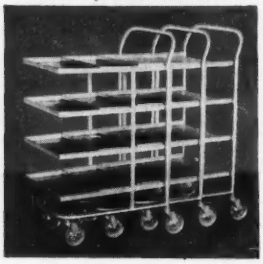

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Relating to Food Poisoning" by Dr. Hiroshi Sugiyama, University of Chicago.

Indiana Dietetic Association. The Indiana Dietetic Association met April 23 and 24 in Fort Wayne. The program included:

"Indiana Dietitians Are Working"—a report by several Indiana dietitians on their professional activities and programs

"New Information about Soap and Detergents"—Harry Teague, DuBois Corporation, Fort Wayne

"Food Production Methods of South America"—Jay Gould, Farm Service Director, Station WOWO, Fort Wayne

"Pediatric Nutrition and Health"—Icie Macy Hoobler, Ph.D., D.Sc., Consultant, Merrill Palmer School, Detroit

"Improved Nutrition of School Children with School Lunch Program"—Irene Williams, Division of School Lunch, Indiana Department of Public Instruction, Indianapolis

"The Continuing Nutritional Needs for Adults"—Franklin A. Bryan, M.D., Fort Wayne

Virginia F. Harger, Secretary of the Council of the House of Delegates, attended the meeting as A.D.A.'s representative.

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Iowa Dietetic Association. April 10 was the date of the Iowa Dietetic Association spring meeting in Davenport. The program featured the following talks:

"How to Get Along with People"—Mark Putman, Community Relations Director, Deere and Company, Moline, Illinois

"The Future Scope of Dietetics"—Katherine Hart, Michigan State University, East Lansing

"Report on Dietary Consideration in Treatment of Phenylketonuria and Galactosemia" — Dr. Hans Zellweger, Department of Pediatrics, State University of Iowa, Iowa City

"The Importance of Continued Study"—Dr. Elizabeth Sutherland, Home Economics Department, Iowa Teachers College, Cedar Falls

"Weight Control Studies of Marycrest College"—Patricia Wolf, student, Marycrest College, Davenport

This meeting was also the occasion for awarding three scholarships for dietetic interns. Two scholarships from the T. V. DuBois Foundation of $100 each were presented to: Carol Hopperstad, Burlington, Iowa; and Caroline Barnes, Kent, Ohio. A third $100 award—made up of $50 from the Des Moines Dietetic Association and $50 by the Iowa Dietetic Association—went to Jo Marie Walsh, Fort Wayne, Indiana.

The following officers for 1958-59 were elected: President, Roberta McHenry, Davenport; President-Elect, Dr. Grace Augustine, Iowa State College, Ames; Secretary, Celia Brain, State University of Iowa, Iowa City.

The *Simplified Diet Manual* of the Iowa Dietetic Association has recently been displayed at three conventions: the Iowa Tuberculosis and Health Association meeting, and the conventions of the Iowa Medical Society and the Iowa Hospital Association.

Kentucky Dietetic Association. The twenty-fourth annual meeting of the Kentucky Dietetic Association was held in Lexington on March 27 and 28. The theme of the meeting was "Today's Challenges in Dietetics." The program featured:

"Prenatal Nutrition" — Genevieve Stearns, Ph.D., College of Medicine, State University of Iowa, Iowa City

"Controlling Food Costs" — Edna Hackler, Kentucky Department of Mental Health, Louisville

"Surveying a Hospital Dietary Service"—Anthony J. Rourke, M.D., Hospital Consultant, New Rochelle, New York

"The Kentucky Food and Drug Law"—Sarah Vance Dugan, Director, Division of Foods and Drugs, Kentucky Department of Health, Louisville

"Dietitians Explore Communication"—Virginia F. Harger, Secretary, A.D.A. Council of the House of Delegates, who served as the national Association's representative

INSIDE SCIENCE

The Vital Story of VITAMIN A

by Science Writer

We live in a golden age of the sciences!

In the science of nutrition discoveries of food elements and their action have resulted in the promise of better health for us all.

Let's consider vitamin A as an example.

A Capsule History. 1913 was the year. Two teams working independently with animal feeding experiments discovered that a diet which was good in all other respects but which varied only in the source of fat caused young animals to thrive or sicken as the fat was varied. The work of these teams (McCollum and Davis; Osborne and Mendel) led to the discovery of the food factor which we know as vitamin A.

Composition and Action. A pale yellow, oil-soluble substance, vitamin A is expressed in the chemist's shorthand as $C_{20}H_{29}OH$. It is necessary in the diets of men and animals to promote the body's growth and development. Vitamin A is a vital requirement in guarding the health of the eyes and skin, and for resistance against infection. It helps maintain the health of mucous membranes and other specialized epithelial and glandular tissues.

Vitamin A enters the body as a constituent of food. Or it may be created within the body when a precursor of vitamin A is eaten. A precursor is a food element with potential vitamin A *value* but no actual vitamin A *content*. For instance, many green leaves have a high vitamin A value but, paradoxically, contain no actual vitamin A. The body converts the precursor into the vitamin. The most common precursor of vitamin A is beta carotene, the natural yellow coloring of many foods, such as dairy products, cereal grains, carrots, alfalfa, etc.

When consumed in food vitamin A is absorbed primarily in the healthy intestine, is esterified in the intestine's walls and is carried as an ester in the lymph and blood to the body's storage depots. The liver, which has a large capacity for storage, contains about 90% of the vitamin A found in the body.

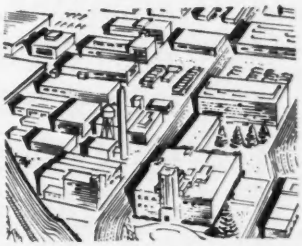
Isolation and Synthesis. It was not until 1937 that pure, crystalline vitamin A was isolated by Holmes and Corbett from fish-liver oil. Research in the synthesis of vitamin A was stimulated during the Second World War by the threat to natural sources in fish-liver oil. This work resulted in several processes to produce vitamin A synthetically. Of these, one of the most successful was evolved by the Roche research team headed by Dr. Otto Isler which was announced in 1947. Much of the vitamin A now used for pharmaceutical manufacturing and food fortification in the United States and many other countries of the world is produced by this process.

Vitamin A and beta carotene produced by the Hoffmann-La Roche synthesis have many positive advantages for food and pharmaceutical manufacturers. Among these are the complete absence of any "fishy" odor, taste, or after-taste; the reasonable and stable price; their stability, purity and uniformity and the assurance of a steady economical supply.

Vitamin A is described in the U. S. Pharmacopoeia as a fully acceptable compound for use in pharmaceutical products. The U. S. Food and Drug Administration has approved its use for the fortification of margarine and other foods.

Human Requirements. The Food & Nutrition Board of the National Research Council recommends that a daily allowance of 5000 International Units of vitamin A in the diet will maintain good nutrition of healthy adults in the U.S.A. The Board's recommendations vary above this for pregnant and lactating women, and below for infants and children. The adult dose used in therapy may vary from 50,000 to 200,000 units daily.

Production. At the huge Roche Park plant of Hoffmann-La Roche in Nutley, New Jersey, over 500 pieces of large-scale chemical engineering equipment are working constantly to produce the superior Roche® vitamin A. This production is so large that Roche vitamin A comes from the plant actually by the tons. In fact, the entire needs of the food and pharmaceutical industries of the United States and Canada can be met from this one plant.



Again the Roche people, who have so often led the way in vitamin research and production, have made another contribution to the better health and well-being of countless millions.

This article is one of a series giving a brief resume of our present knowledge of those essential health factors—the vitamins. Reprints of this and other articles are available without charge. The Vital Story of Vitamin C was published previously and others are forthcoming. Send your request to: Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.

Maryland Dietetic Association. In March, 102 Maryland dietitians and guests heard Dr. E. V. McCollum, Emeritus Professor of Biochemistry, Johns Hopkins University, discuss "The History of Nutrition." Members of the staff of the Sisters of Mercy Hospital, Baltimore, served as hostesses and surprised Dr. McCollum with a cake and ice cream to celebrate his seventy-ninth birthday. In his talk, Dr. McCollum recalled the early days of nutrition research and told how he first started by catching wild rats to use in his experiments. However, he found them too vicious, and tame rats were finally obtained. He discussed the events leading to the discovery of vitamins A and D.

A joint committee of the Maryland Nursing League and the Maryland Dietetic Association has as its project further work in developing the nutrition experience of the student nurse.

New York State Dietetic Association. The program of the annual meeting of the New York State Dietetic Association meeting in New York City, April 23 to 25, was as follows:

"Protein Nutrition and Liver Disease"—the Annual Mary Swartz Rose Memorial Lecture of the Greater New York Dietetic Association—by Paul György, Professor of Pediatrics, University of Pennsylvania, Philadelphia

Sectional meetings:

"How Do You Get It Done?"

"Nutrition Teaching in the Changing Nursing Program"

"Training for Nutrition Education in the School Food Service Program"

"Changing Concepts in Layout and Equipment"

"Dynamic and Streamlined Systems of Control"—Dr. Neva Henrietta Radell, Director of School Food Service, Dwight Morrow High School, Englewood, New Jersey

"Nutrition Budgeting" — Agnes Fowler, Nutritionist, New York State Department of Social Welfare, Albany

"Recent Research in Fat Metabolism" —Dr. Sami Hashim, Harvard School of Public Health, Boston

"Expanding Sound Nutrition Information"—Dr. Horace L. Sipple, Nutrition Foundation, New York City

"Nutrition Around the World"—Dr. James M. Hundley, FAO Nutrition Advisor to UNICEF

"Communicating Nutrition to Older Adults"—Dr. Irving Lorge, Professor of Education, Teachers Colleges, Columbia University, New York City

Dr. E. Neige Todhunter, A.D.A. President, attended as the national Association's representative.

North Carolina Dietetic Association. The spring meeting of the North Carolina Dietetic Association was held in Wilmington on April 11. The program included a talk on "Broadening Membership in A.D.A.," by Mary M. Griffin, Newark, who served as A.D.A.'s representative; and a panel discussion on "Am I Meeting My Responsibility for Recruitment?" in which participants included four students, a nutritionist, and a dietitian.

The *Charlotte Dietetic Association* this year has had meetings of special interest. Veronica Morrissey, S & W, Cafeteria chain, spoke on commercial food production and showed slides of specialty items. "Celiac and Related Syndromes" was the subject discussed by a head resident from the Charlotte Memorial Hospital, at another meeting. The program for a third meeting featured the Rev. Cuthbert E. Allen, President, Belmont Abbey College, who spoke on "Philosophy of Diet." Methods of improving reading speed and comprehension were discussed by Dr. David L. Shepherd at a fourth meeting.

The *Durham-Chapel Hill Dietetic Association* has enjoyed a number of stimulating programs this year. C. Frances MacKinnon, University of North Carolina, has reported on her year's work in Malaya for the Food and Agriculture Organization. Another program of special interest was that given by Gloria K. Warren, who spoke on "Low-Fat Cookery." Mrs. Warren is the co-author of a book by the same title, which she co-authored with Evelyn S. Stead at the request of their respective husbands who are doctors at Duke University. At a third meeting there was a discussion of the relationship between occupational

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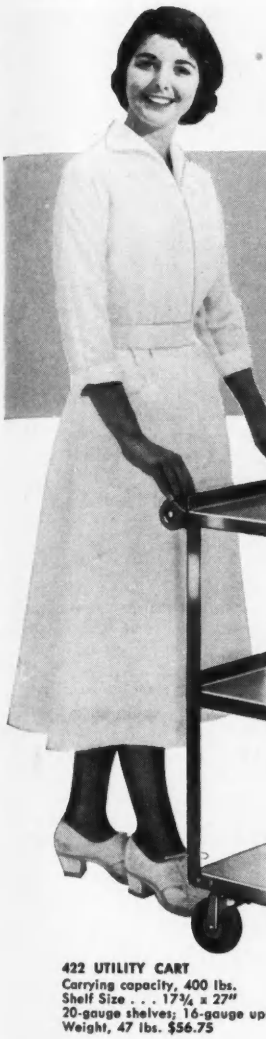

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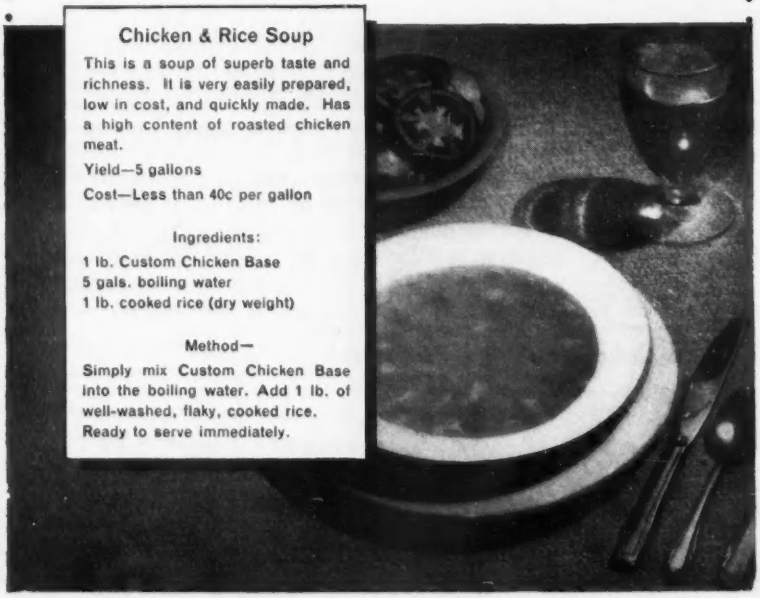


Chicken & Rice Soup

This is a soup of superb taste and richness. It is very easily prepared, low in cost, and quickly made. Has a high content of roasted chicken meat.

Yield—5 gallons

Cost—Less than 40c per gallon

Ingredients:

1 lb. Custom Chicken Base
5 gals. boiling water
1 lb. cooked rice (dry weight)

Method—

Simply mix Custom Chicken Base into the boiling water. Add 1 lb. of well-washed, flaky, cooked rice. Ready to serve immediately.

therapy, dietetic, and physical therapy by Christine Burton and Sue Flowers of North Carolina Memorial Hospital.

A third local association, the *Greensboro Dietetic Association*, has recently been formed.

South Carolina Dietetic Association. On April 11 and 12, the South Carolina Dietetic and Hospital Associations co-sponsored an "Institute on Hospital Food Service" in Columbia. This institute grew out of a survey made last year showing that hospital administrators felt a need and desire for such a meeting.

A joint committee of the Dietetic Association and the South Carolina League of Nursing is continuing to work on "Nutrition Education in the Basic Curriculum," a project which was begun in September 1957 at a workshop on this topic.

The South Carolina Dietetic Association is also represented on the state Nutrition Committee, which held a "Food Comes First" meeting on February 19 to emphasize better breakfasts. South Carolina, working through this committee and the state Farm Bureau, was the first state to sponsor a definite program of "Food Comes First" and was so recognized at the National Food Conference held recently in Washington.

As Career Guidance Chairman of the state, Katherine Bailey has contacted the principals of all major high schools to tell them that a representative of our profession is available to speak at career day programs or other meetings.

South Dakota Dietetic Association. On June 19, the South Dakota Dietetic Association will sponsor a "Short Course for Hospital Cooks" at South Dakota State College, Brookings. An attendance of about thirty is expected. The program will include:

"Menu Planning for the Hospitalized Patient"—Evelyn Hollen, South Dakota State College

"Food Purchasing for Good Food Service"—Sister Alma, St. Joseph's Hospital, Mitchell

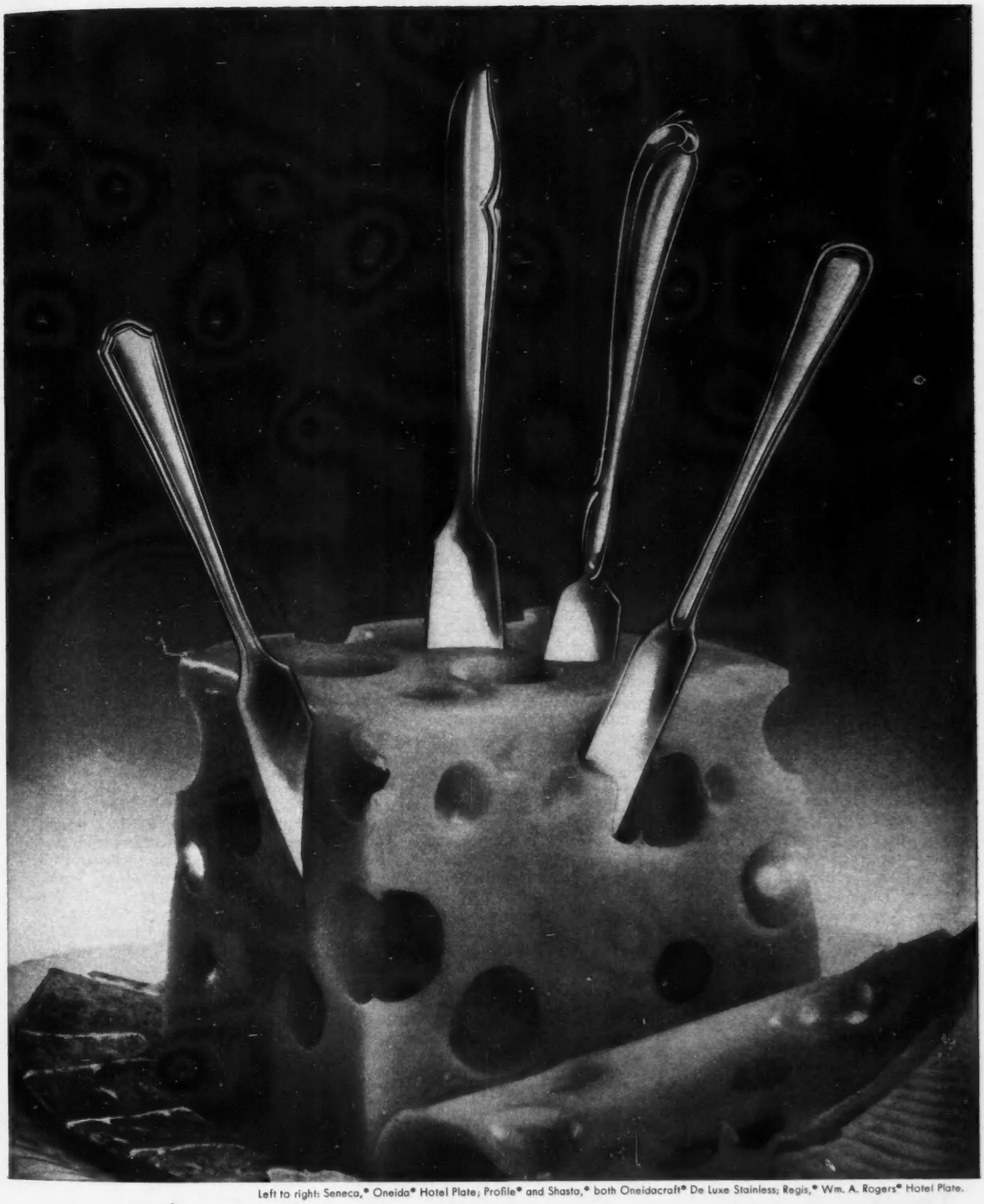
"Meat and Vegetable Cookery to Save Money, Food Value, and Appetite Appeal"—Dr. Lida M. Burrill, South Dakota State College

"Clean Practices and Attractive Appearance for the Food Handler"—Irma Nachtigal and Peggy Arnold, Sioux Valley Hospital, Sioux Falls

"Pep Up Supper—Suggestions for Attractive Evening Meals" — Beryl Meyer, McKennan Hospital, Sioux Falls, and Frances Hettler, South Dakota State College

Virginia Dietetic Association. Staunton was the meeting place of the Virginia Dietetic Association on April 18 and 19. The program included:

"Principles of Management"—Robert Hudgens, Director, School of Hospital Administration, Medical College of Virginia, Richmond



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"Food Habits of People in Foreign Countries"—LeVelle Wood, A.D.A. President-Elect, who served as the national Association's representative

"Public Health as It Relates to Dietetics"—a panel discussion, with:

"New Requirements and Sanitary Policies"—Robert Ham, Director, Hospital Services, Virginia Department of Health, Richmond

"Feeding of Patients of Alcoholic Clinics"—Kenneth F. Lee, Director, Division of Alcohol Studies, Virginia Department of Health, Richmond

"Meat Inspection Programs"—Alfred L. Stafford, M.D., Director, Meat Inspection Service, Virginia Department of Health, Richmond

Association Activities

Conference on Children and Youth. Mary Reeves, Children's Bureau, Chicago, as our official representative, attended the Fourth Joint Conference on Children and Youth held in Chicago, March 17 and 18. Co-sponsoring organizations were: Council of National Organizations, Federal Interdepartmental Committee on Children and Youth, and National Council of State Committees for Children and Youth, with the Illinois Commission on Children as the host. More than two hundred persons attended, representing national organizations, state commissions or committees on children and youth, and youths themselves.

Katherine B. Oettinger, Chief, Children's Bureau, in the keynote address, emphasized bold planning for the 1960 White House Conference on Children and Youth. Through communication with the White House, the tentative conference dates have been established as the week of March 13, 1960.

Mrs. Oettinger said the Children's Bureau, in its traditional role as initiator of White House Conference planning, has been obtaining suggestions from a number of advisory groups which it will pass on when the formal conference structure is established and a National Advisory Committee is appointed by the President. Additional advisors from many disciplines and representatives of general citizen interest will be called on for ideas, which will also be forwarded to the official Advisory Committee. "The role of the Federal government," Mrs. Oettinger said, "will be one of facilitating the expression of national interest and of making sure that cross fertilization of ideas takes place at the widest possible level."

Mrs. Oettinger commented that youths and adults are urged to work closely together in discussing the role of youth today and that youth should be alerted soon to prepare for participation in the 1960 conference.

Other sessions of this meeting emphasized "Working Together—How It's Done" from the standpoint of states, and regions, as well as youths and adults.

A highlight of the meeting was the participation of the youth representatives from the state groups. In addition, it was encouraging to learn that many state committees organized prior to the 1950 White House Conference have continued to function effectively in improving conditions which affect well-being of children.

Following the general session, Miss Reeves attended a portion of the annual business meeting of the Council of National Organizations. The discussion in this meeting centered around the future status of the Council. Additional topics related to action which the Council might take in implementing the 1960 White House Conference.

A.D.A. Representation. Another regional nursing education conference sponsored by the *National League for Nursing, Inc.*, was held on March 11 and 13, 1958. Approximately 240 nursing educators from ten states and the District of Columbia met in Philadelphia. Corinne Robinson attended as representative of The American Dietetic Association.

Bessie Brooks West, Kansas State College, attended the *Arkansas Dietetic Association* meeting in Little Rock, May 19 and 20 as A.D.A representative.

Ruth Smith, Sonoma State Hospital, Eldridge, California, was the A.D.A. representative at the meeting of the Women's Civil Defense Council of the *Federal Civil Defense Administration Region 7*, April 17 and 18, in Santa Rosa, California.

Emergency Mass Feeding Courses. Three A.D.A. members served as instructors for Red Cross—Federal Civil Defense Emergency Mass Feeding Courses held recently in North Carolina: Major Elizabeth Carloss, U.S. Army Hospital, Fort Bragg; Ann Eyl, VA Hospital, Fayettesville; and Vera Jenkins, Fayettesville.

Four classes conducted simultaneously were followed by the combined group participating in a demonstration at Fort Bragg. This was the first mass feeding demonstration to be held in conjunction with a military post in the Southeast. Mrs. Jenkins served as coordinator of the entire basic course in Emergency Mass Feeding and also coordinated the final demonstration. Certificates were given these instructors for their whole-hearted support of this community project.

Food Facts Talk Back. Do you own a copy of the A.D.A. booklet, *Food Facts Talk Back?* As you know, it contains 121 fallacies about foods, with statements refuting each. Over 17,000 copies have reached interested persons. Written in popular style, the information can be used effectively to combat food misinformation—in connection with professional and non-

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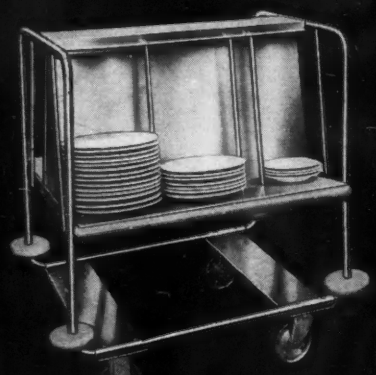

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Memento from Miami Meeting. A limited number of mementos from our Association's Annual Banquet in Miami last October are still available. The attractive key chain may be purchased by A.D.A. members from Headquarters office for $1 each.

Obituaries

Katherine Wofford Darland. The A.D.A. office has been notified of the death on March 1 of Katherine Wofford Darland, of Tucson. Mrs. Darland first became a member of the Association in 1938. Before going to Tucson, where she served on the staff of Pima County General Hospital, Mrs. Darland had been employed at the Latter Day Saints Hospital, Salt Lake City; Knoxville (Tennessee) General Hospital; and Fresno (California) General Hospital. During the war she was an Army dietitian.

Mabel D. Weir. Word has been received in Headquarters office of the death of Mabel D. Weir. Miss Weir had been a member of the Association since 1936 and had been employed at Knoxville College, Knoxville, Tennessee, until her retirement because of illness.

News of Products and Services

Associated Blue Lake Green Bean Canners, Inc., are offering a series of large quantity recipes developed in well known restaurants throughout the country. On the face of each 4- by 6-in. card are given the ingredients, weight and measure or count, the number of portions, size of portions, and cost per portion. On the reverse side, each step in preparation of the product is outlined. Blue Lake is not a brand name; the beans are packed and marketed under a variety of brand names. Grown in Oregon and Washington, they are rich in vitamin A and ascorbic acid. They have been cleaned, cut, and cooked. Just heat to serve. They are said to have great stability on the steam table, thus eliminating waste.

A new recipe booklet for quantity fruit users, entitled "Better Fruit Dishes with Low-Moisture Fruits," has been published by the *Vacu-dry Company*. Forty selected recipes for stewed fruits, sauces, pies, pastries, cakes, cookies, breads, puddings, and other desserts using low-moisture fruits show required ingredients for 100 servings as well as for lesser

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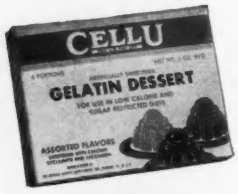

CELLU GELATIN DESSERT is a long time favorite of those on sugar restricted diets. It comes in artificially sweetened orange, lemon, lime, raspberry, cherry and strawberry flavors (single or assorted) in 6 or 20 individual servings to a package; also in 1 lb. packages. *Low-sodium gelatin also available.*

CELLU RENNET POWDER makes a tasty, quick junket-like pudding when combined with milk or cream. Powder has no food value. Comes in raspberry, strawberry, chocolate cream, maple, vanilla, peppermint and coffee flavors. 12 single serving envelopes to a box.

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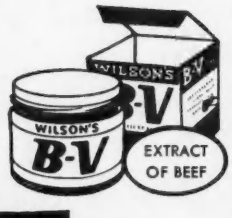

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quantities of 24 and 36 portions. Cooking time and recommended amounts of sugar have been tested in the Vacudry laboratories.

California food canners and associated suppliers are celebrating this year the 100th anniversary of commercial canning in the state. The centenary finds California in the number one U.S. position as a producer of canned food. Canning and allied activities rank as the largest providers of employment among peace-time industries in the state. An official medallion with the slogan *merito primus* —"through merit, to first place"— executed by Peter Ganine, designer-sculptor, and commissioned by the *Canners League of California* and the *American Can Company* will symbolize the 1958 observance.

Campbell Soup Company's three new soups—turkey noodle, chicken vegetable, and minestrone—are now being introduced in the institutional market in the commercial 50-oz. size. The 8-oz. ready-to-serve size will soon be available. With the addition of these new soups, Campbell's now has eighteen soups packed in 50-oz. condensed size. The average cost per 6-oz. serving of the three new soups is 4.6 cents.

Lincoln Manufacturing Co., Inc., announces the availability of a new food service unit called the "Add-A-Teria." The Add-A-Teria consists of modular-type stainless steel storage units to be used both for transporting food and as the actual serving unit. All units fit together in a "building block" system to form a unit. Incorporated in the line are Add-A-Teria units for beverages, ice cream, cashier, trays, silverware, and dishes. The stainless steel storage units are equipped with lock wheels, folding tray slides, accessory display shelves, and protectors. All units are completely insulated and can be electrically heated for hot foods or used for cold foods.

Armour Laboratories, pharmaceutical division of *Armour and Company*, is marketing a new liquid product claimed to be effective in lowering blood cholesterol levels. Trademarked ARCOFAC, the new product is obtained from safflower seed, which has a high content of linoleic acid. It is an emulsion of safflower oil, the other principal ingredient being pyridoxine hydrochloride (vitamin B_6). Its taste is said to be similar to that of thick cream, and it may be mixed with fruit juices, coffee, or as a salad dressing. The company states that ARCOFAC is essentially a food supplement and that no side effects have been observed. One dose a day, on a physician's prescription, may be taken any time during the day, so that it is not necessary for the patient to carry the product with him. The company claims that ARCOFAC can start reduction of the cholesterol level within 48 hr., but that significant lowering may require two to three weeks.